MARTIN GARDNER GATHERING • PADRE PIO: SAINT OR CHARLATAN? • BEN STEIN'S TROJAN HORSE

Skeptical Inquirer™

THE MAGAZINE FOR SCIENCE AND REASON

Volume 32, No. 5 • September/October 2008 • INTRODUCTORY PRICE U.S. and Canada $4.95

QUESTIONABLE Medical Treatments

- Vagus Nerve Stimulus Device
- The Bipolar Bamboozle
- Ads, Akavar, & Avarice

The Nibiru Myth & 2012 Apocalypse

Astronomical Misinformation

Published by the Committee for Skeptical Inquiry

COMMITTEE FOR SKEPTICAL INQUIRY

FORMERLY THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL (CSICOP)
AT THE CENTER FOR INQUIRY/TRANSNATIONAL (ADJACENT TO THE STATE UNIVERSITY OF NEW YORK AT BUFFALO NORTH CAMPUS)

AN INTERNATIONAL ORGANIZATION

Paul Kurtz, Chairman; professor emeritus of philosophy, State University of New York at Buffalo
Barry Karr, Executive Director
Joe Nickell, Senior Research Fellow
Richard Wiseman, Research Fellow
Massimo Polidoro, Research Fellow
Lee Nisbet, Special Projects Director

FELLOWS

James E. Alcock,* psychologist, York Univ., Toronto
Marcia Angell, M.D., former editor-in-chief, *New England Journal of Medicine*
Stephen Barrett, M.D., psychiatrist, author, consumer advocate, Allentown, Pa.
Willem Betz, professor of medicine, Univ. of Brussels
Irving Biederman, psychologist, Univ. of Southern California
Susan Blackmore, Visiting Lecturer, Univ. of the West of England, Bristol
Henri Broch, physicist, Univ. of Nice, France
Jan Harold Brunvand, folklorist, professor emeritus of English, Univ. of Utah
Mario Bunge, philosopher, McGill University
Sean B. Carroll, professor of molecular genetics, Univ. of Wisconsin–Madison
John R. Cole, anthropologist, editor, National Center for Science Education
Frederick Crews, literary and cultural critic, professor emeritus of English, Univ. of California, Berkeley
Richard Dawkins, zoologist, Oxford Univ.
Geoffrey Dean, technical editor, Perth, Australia
Cornelis de Jager, professor of astrophysics, Univ. of Utrecht, the Netherlands
Daniel C. Dennett, university professor and Austin B. Fletcher Professor of Philosophy, director of the Center for Cognitive Studies at Tufts Univ.
Ann Druyan, writer and producer, and CEO, Cosmos Studios, Ithaca, New York
Kenneth Feder, professor of anthropology, Central Connecticut State Univ.
Antony Flew, philosopher, Reading Univ., U.K.
Barbara Forrest, professor of philosophy, Southeastern Louisiana Univ.
Andrew Fraknoi, astronomer, Foothill College, Los Altos Hills, Calif.
Kendrick Frazier*, science writer, editor, SKEPTICAL INQUIRER
Yves Galifret, executive secretary, l'Union Rationaliste
Martin Gardner, author, critic
Murray Gell-Mann, professor of physics, Santa Fe Institute; Nobel laureate
Thomas Gilovich, psychologist, Cornell Univ.
Henry Gordon, magician, columnist, Toronto
Susan Haack, Cooper Senior Scholar in Arts and Sciences, professor of philosophy and professor of Law, University of Miami
C. E. M. Hansel, psychologist, Univ. of Wales
David J. Helfand, professor of astronomy, Columbia Univ.
Douglas R. Hofstadter, professor of human understanding and cognitive science, Indiana Univ.
Gerald Holton, Mallinckrodt Professor of Physics and professor of history of science, Harvard Univ.
Ray Hyman,* psychologist, Univ. of Oregon
Leon Jaroff, sciences editor emeritus, *Time*
Sergei Kapitza, former editor, Russian edition, *Scientific American*
Lawrence M. Krauss, author and professor of physics and astronomy, Case Western Reserve University
Harry Kroto, professor of chemistry and biochemistry, Florida State University; Nobel laureate
Edwin C. Krupp, astronomer, director, Griffith Observatory
Paul Kurtz,* chairman, Center for Inquiry
Lawrence Kusche, science writer
Leon Lederman, emeritus director, Fermilab; Nobel laureate in physics
Scott Lilienfeld, psychologist, Emory Univ.
Lin Zixin, former editor, *Science and Technology Daily* (China)
Jere Lipps, Museum of Paleontology, Univ. of California, Berkeley
Elizabeth Loftus, professor of psychology, Univ. of California, Irvine
John Maddox, editor emeritus of *Nature*
David Marks, psychologist, City University, London
Mario Mendez-Acosta, journalist and science writer, Mexico City, Mexico
Marvin Minsky, professor of media arts and sciences, M.I.T.
David Morrison, space scientist, NASA Ames Research Center
Richard A. Muller, professor of physics, Univ. of Calif., Berkeley
Joe Nickell, senior research fellow, CSI
Lee Nisbet,* philosopher, Medaille College
Bill Nye, science educator and television host, Nye Labs
James E. Oberg, science writer
Irmgard Oepen, professor of medicine (retired), Marburg, Germany
Loren Pankratz, psychologist, Oregon Health Sciences Univ.
Robert L. Park, professor of physics, Univ. of Maryland
John Paulos, mathematician, Temple Univ.
Steven Pinker, cognitive scientist, Harvard
Massimo Polidoro, science writer, author, executive director CICAP, Italy
Milton Rosenberg, psychologist, Univ. of Chicago
Wallace Sampson, M.D., clinical professor of medicine, Stanford Univ., editor, *Scientific Review of Alternative Medicine*
Amardeo Sarma*, senior manager, NEC Europe Ltd.; chairman, GWUP, Germany.
Evry Schatzman, former president, French Physics Association
Eugenie Scott, physical anthropologist, executive director, National Center for Science Education
Robert Sheaffer, science writer
Elie A. Shneour, biochemist, author, president and research director, Biosystems Research Institute, La Jolla, Calif.
Dick Smith, film producer, publisher, Terrey Hills, N.S.W., Australia
Robert Steiner, magician, author, El Cerrito, Calif.
Victor J. Stenger, emeritus professor of physics and astronomy, Univ. of Hawaii; adjunct professor of philosophy, Univ. of Colorado
Jill Cornell Tarter, astronomer, SETI Institute, Mountain View, Calif.
Carol Tavris, psychologist and author, Los Angeles, Calif.
David Thomas, physicist and mathematician, Peralta, New Mexico
Stephen Toulmin, professor of philosophy, Univ. of Southern California
Neil deGrasse Tyson, astrophysicist and director, Hayden Planetarium, New York City
Marilyn vos Savant, *Parade* magazine contributing editor
Steven Weinberg, professor of physics and astronomy, Univ. of Texas at Austin; Nobel laureate
E.O. Wilson, university professor emeritus, Harvard University
Richard Wiseman, psychologist, University of Hertfordshire
Benjamin Wolozin*, professor, department of pharmacology, Boston University School of Medicine

• • • Visit the CSI Web site at www.csicop.org • • •

The SKEPTICAL INQUIRER (ISSN 0194-6730) is published bimonthly by the Committee for Skeptical Inquiry, 3965 Rensch Road, Amherst, NY 14228. Printed in U.S.A. Periodicals postage paid at Buffalo, NY, and at additional mailing offices. Subscription prices: one year (six issues), $35; two years, $60; three years, $84; single issue, $4.95. Canadian and foreign orders: Payment in U.S. funds drawn on a U.S. bank must accompany orders; please add US$10 per year for shipping. Canadian and foreign customers are encouraged to use Visa or MasterCard. Canada Publications Mail Agreement No. 41153509. Return undeliverable Canadian addresses to: IMEX, P.O. Box 4332, Station Rd., Toronto, ON M5W 3J4.

Inquiries from the media and the public about the work of the Committee should be made to Paul Kurtz, Chairman, CSI, P.O. Box 703, Amherst, NY 14226-0703. Tel.: 716-636-1425. Fax: 716-636-1733.

Manuscripts, letters, books for review, and editorial inquiries should be addressed to Kendrick Frazier, Editor, SKEPTICAL INQUIRER, 944 Deer Drive NE, Albuquerque, NM 87122. Fax: 505-828-2080. Before submitting any manuscript, please consult our Guide for Authors for format, references, and submittal requirements. It is on our Web site at www.csicop.org/si/guide-for-authors.html and on page 56 of the March/April 2008 issue. Or you may send a fax request to the editor.

Articles, reports, reviews, and letters published in the SKEPTICAL INQUIRER represent the views and work of individual authors. Their publication does not necessarily constitute an endorsement by CSI or its members unless so stated.

Copyright ©2008 by the Committee for Skeptical Inquiry. All rights reserved. The SKEPTICAL INQUIRER is available on 16mm microfilm, 35mm microfilm, and 105mm microfiche from University Microfilms International and is indexed in the Reader's Guide to Periodical Literature.

Subscriptions and changes of address should be addressed to: SKEPTICAL INQUIRER, P.O. Box 703, Amherst, NY 14226-0703. Or call toll-free 1-800-634-1610 (outside the U.S. call 716-636-1425). Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. SKEPTICAL INQUIRER subscribers may not speak on behalf of CSI or the SKEPTICAL INQUIRER.

Postmaster: Send changes of address to SKEPTICAL INQUIRER, P.O. Box 703, Amherst, NY 14226-0703.

Skeptical Inquirer

September / October 2008 • Vol. 32, No. 5

QUESTIONABLE MEDICAL TREATMENTS

35 **Corporate Self Interest and Vagus Nerve Stimulation for Depression**

An American corporation has pressured the FDA and psychiatric organizations, researchers, clinicians, and patients to use its expensive and unproven Vagus Nerve Stimulation device for serious depression. This advocacy compromises scientific and medical integrity.

PETER BARGLOW

41 **The Bipolar Bamboozle**

With the broadening and softening of the criteria needed to label someone with bipolar disorder and aggressive marketing campaigns by pharmaceutical companies, millions of people are being told they have a severe psychiatric disorder and are being prescribed powerful antipsychotic medications. In fact, most are normal people dealing normally with everyday life issues.

STEPHEN RAY FLORA AND SARAH ELIZABETH BOBBY

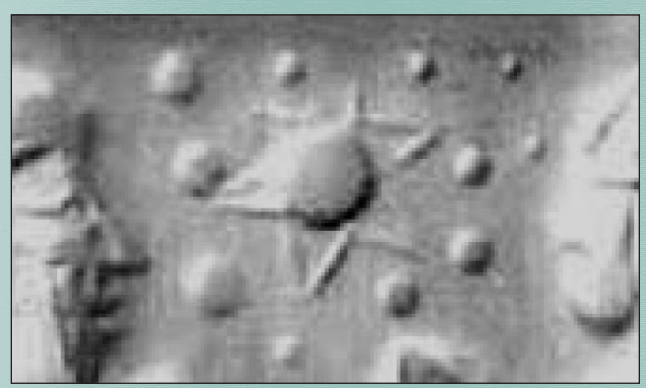
46 **'We Couldn't Say It in Print If It Wasn't True'**

Akavar's Version of Truth in Advertising

An ad for a weight-loss product falsifies its own slogan by printing outright lies. An attempt to find the advertised "published research" becomes a surreal odyssey.

HARRIET HALL

ARTICLE



50 **The Myth of Nibiru and the End of the World in 2012**

An astronomer tries to counter misinformation on the Internet about claims of a supposed rogue planet and an impending catastrophe, encountering troubling credulity, scientific illiteracy, and conspiracy thinking along the way.

DAVID MORRISON

SPECIAL REPORTS

12 **The Eighth Gathering for (Martin) Gardner**

RAY HYMAN

15 **A Special Afterword from Martin Gardner**

16 **Ben Stein's Trojan Horse**

MATTHEW C. NISBET

19 **Padre Pio: Wonderworker or Charlatan?**

JOE NICKELL

COLUMNS

EDITOR'S NOTE
A Trio of Questionable Medical Treatments 4

NEWS AND COMMENT
CSI's Robert P. Balles Award Goes to *New York Times* Science Writer Natalie Angier / Hoax Led to Polygamist Sect Raid / No Safe Level? Science and Secondhand Smoke / The Amazing Randi Strikes Again! / Finally, Sylvia Browne's Final Tour / Psychic's False Sex Abuse Claim Threatens Family 5

INVESTIGATIVE FILES
Lighthouse Specters
JOE NICKELL 22

THINKING ABOUT SCIENCE
The Brain on Justice
MASSIMO PIGLIUCCI 26

NOTES ON A STRANGE WORLD
Hunting for Spooklights
MASSIMO POLIDORO 27

PSYCHIC VIBRATIONS
Alien Peeping Tom—Film at Eleven
ROBERT SHEAFFER 30

THE SKEPTICAL PSYCHOLOGIST
The Truth About Brain Science
ROBERT EPSTEIN 32

THE SKEPTICAL INQUIREE
The Sweet Spirit Sounds of Rosemary Brown
BENJAMIN RADFORD 34

NEW BOOKS 61

LETTERS TO THE EDITOR 62

REVIEWS

Nuclear Energy Now: Why the Time Has Come for the World's Most Misunderstood Energy Source
By Alan M. Herbst and George W. Hopley
KENNETH W. KRAUSE 56

On Being Certain: Believing You Are Right Even When You're Not
By Robert Burton
HARRIET HALL 58

Top Secret: The Truth Behind Today's Pop Mysticisms
By Robert M. Price
WILLIAM HARWOOD 59

Adventures in Paranormal Investigation
By Joe Nickell
TERRY SMILJANICH 60

Editor's Note

A Trio of Questionable Medical Treatments

The three articles under the theme "Questionable Medical Treatments" in this issue delve into problems with modern medicine and over-promotion of some of its products. It is interesting that only the third one would fall under the rubric of "alternative medicine." That is physician Harriet Hall's amusing and insightful (typical for her) article about her effort to get a company named Akavar to provide information about two published studies supposedly documenting its astounding claims. Her odyssey did at times, as she says, become almost surreal. That's not an uncommon feeling when dealing with apparently bogus medical claims.

The other two articles examine practices that are more mainstream.

Physician and clinical professor of psychiatry Peter Barglow investigates a private company's aggressive practices—and a number of leading psychiatric researchers' conflicts of interest—in marketing and pushing the FDA to approve the company's implantable device for the treatment of depression. He documents a widespread campaign by the company, Cyberonics, to exert its influence on the highest reaches of the federal government's regulatory processes. And conflicts of interest so extreme that leaders of the psychiatric profession were virtually acting as the company's willing accomplices. Repeated published studies failed to find the device worked for depression, so the company took the political route, applying relentless pressure on the FDA and the U.S. Department of Health and Human Services. A five-member FDA review team evaluated the device and recommended it not be approved for depression. FDA officials reversed its own scientific panel's findings and approved the device. This triggered a Senate investigation, and the then-head of the FDA later resigned. Barglow also documents the company's aggressive campaign of promotion to the American Psychiatric Association in an attempt to gain Medicare approval for the device. Medicare declined approval last year, but the campaigns continue. As Barglow says, "The story of Cyberonics is not an isolated example of collusion between the psychiatric establishment, political appointees, and leaders of corporations that profit from mental illness." And one has to agree with him that such practices compromise scientific integrity and distort the medical decision-making process.

In "The Bipolar Bamboozle," Stephen Ray Flora and Sarah Elizabeth Bobby question the epidemic of diagnoses of bipolar disorder. The criteria needed to label someone bipolar have been broadened and softened. Aggressive marketing campaigns by pharmaceutical companies are again involved. The result, the authors say, is that millions of people are now being told they have a severe psychiatric disorder and being prescribed powerful antipsychotic medications when most are normal people dealing with normal life issues.

* * *

If you have heard anything about a supposed rogue planet named Nibiru and its supposed apocalyptic effects in 2012, read astronomer and CFI Fellow David Morrison's illuminating article in this issue. He does his best to counter this Internet myth but encounters frustrating misinformation, willful misunderstanding, anger, conspiracy mongering, and hostility. Is it worth it?

—KENDRICK FRAZIER

Skeptical Inquirer™
THE MAGAZINE FOR SCIENCE AND REASON

EDITOR
Kendrick Frazier

EDITORIAL BOARD
James E. Alcock
Thomas Casten
Martin Gardner
Ray Hyman
Paul Kurtz
Joe Nickell
Lee Nisbet
Amardeo Sarma
Benjamin Wolozin

CONSULTING EDITORS
Susan J. Blackmore
John R. Cole
Kenneth L. Feder
Barry Karr
E. C. Krupp
Scott O. Lilienfeld
David F. Marks
Jay M. Pasachoff
Eugenie Scott
Richard Wiseman

CONTRIBUTING EDITORS
Austin Dacey
Harriet Hall
Chris Mooney
James E. Oberg
Robert Sheaffer
David E. Thomas

MANAGING EDITOR
Benjamin Radford

ART DIRECTOR
Lisa A. Hutter

PRODUCTION
Christopher Fix
Paul Loynes

ASSISTANT EDITORS
Donna Budniewski
Julia Lavarnway
Andrea Szalanski

CARTOONIST
Rob Pudim

WEB-PAGE DESIGNER
Patrick Fitzgerald

PUBLISHER'S REPRESENTATIVE
Barry Karr

CORPORATE COUNSEL
Brenton N. VerPloeg

BUSINESS MANAGER
Sandra Lesniak

FISCAL OFFICER
Paul Paulin

VICE PRESIDENT OF PLANNING AND DEVELOPMENT
Sherry Rook

DATA OFFICER
Jacalyn Mohr

STAFF
Darlene Banks
Patricia Beauchamp
Cheryl Catania
Matthew Cravatta
Roe Giambrone
Leah Gordon
Sandy Kujawa
Anthony Santa Lucia
John Sullivan
Vance Vigrass

PUBLIC RELATIONS
Nathan Bupp
Henry Huber

INQUIRY MEDIA PRODUCTIONS
Thomas Flynn

DIRECTOR OF LIBRARIES
Timothy S. Binga

The SKEPTICAL INQUIRER is the official journal of the Committee for Skeptical Inquiry, an international organization.

CSI's Robert P. Balles Award Goes to *New York Times* Science Writer Natalie Angier

NATHAN BUPP

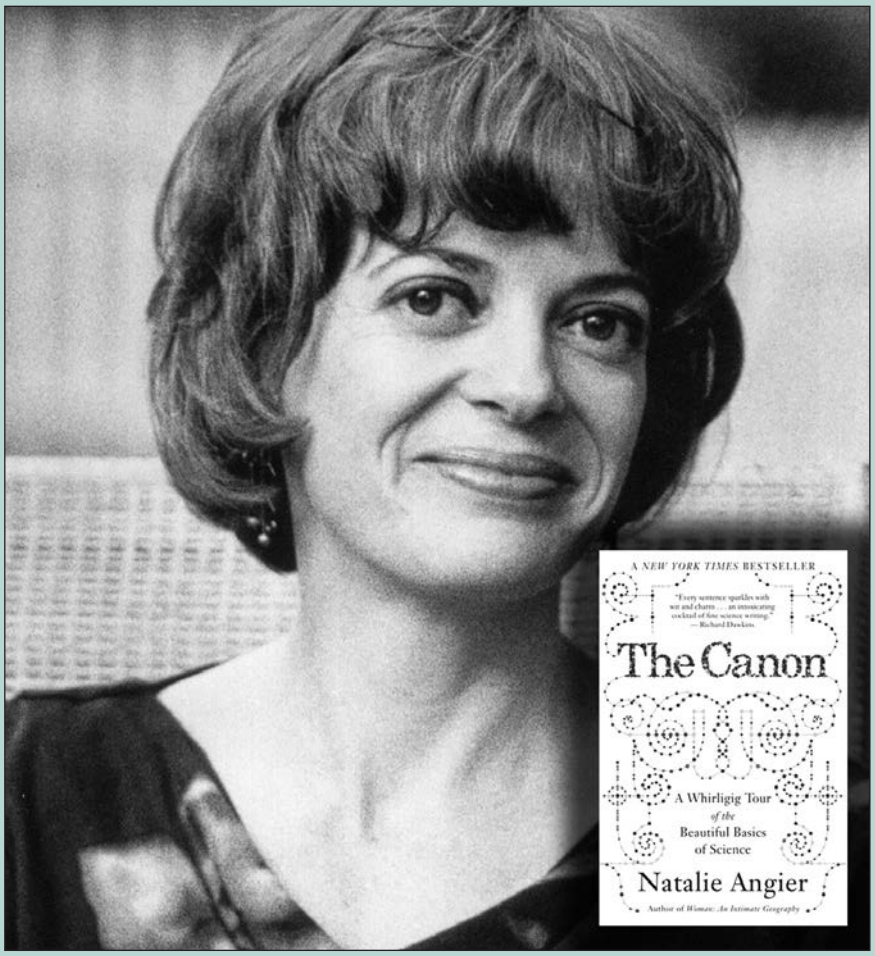
The Committee for Skeptical Inquiry awarded its third Robert P. Balles Annual Prize in Critical Thinking to Natalie Angier for her book *The Canon: A Whirligig Tour of the Beautiful Basics of Science,* published in 2007 by Houghton Mifflin.

Natalie Angier is a Pulitzer Prize-winning science journalist for *The New York Times.* Born in the Bronx borough of New York City, she studied physics and English at Barnard College, graduating with high honors in 1978. From 1980 to 1984, Angier wrote about biology for *Discover* magazine. She also worked as a science writer for *Time* magazine. Among her other books are *Natural Obsessions, The Beauty of the Beastly,* and *Woman: An Intimate Geography.*

The Canon finds Angier charting a synoptic and exciting course through physics, chemistry, biology, geology, and astronomy. She calls her book an attempt to unleash "the kinetic beauty of science to wow as it will." Angier's intelligence, wit, and passionate commitment to the scientific worldview are palpable throughout. Her *tour de force* first chapter should be of particular interest to readers of SKEPTICAL INQUIRER, as she thoughtfully explores what it means to think scientifically and the benefits of extending the scientific ethos to all areas of human life.

Writing in the spring 2004 issue of *The American Scholar,* Angier mused, "I recognize that science doesn't have all the answers and doesn't pretend to, and that's one of the things I love about it. But it has a pretty good notion of what's probable or possible…."

Angier is the recipient of numerous honors for her writing on science, including the American Association for the Advancement of Science (AAAS) prize for excellence in science journalism and the Lewis Thomas award for distinguished writing in the life sciences.



Natalie Angier

The Robert P. Balles Annual Prize in Critical Thinking is a $1,200 award given to the author of the published work that best exemplifies healthy skepticism, logical analysis, or empirical science. Each year, CSI selects the paper, article, book, or other publication that has the greatest potential to create positive reader awareness of important scientific issues.

CSI, the publisher of the SKEPTICAL INQUIRER, established the criteria for the prize, including use of the most parsimonious theory to fit data or to explain apparently preternatural phenomena.

This prize has been established through the generosity of Robert P. Balles, an associate member of CSI, and the Robert P. Balles Endowed Memorial Fund, a permanent endowment fund for the benefit of CSI.

Last year's Balles Prize was awarded to Ben Goldacre for his weekly column, "Bad Science," published in *The Guardian* newspaper (U.K.).

Nominations are now being accept-ed for 2008. Please send submissions to: Barry Karr, Executive Director, CSI, P.O. Box 703, Amherst, NY 14226-0703 or via e-mail at SkeptInq@aol.com.

Nathan Bupp is vice president and director of

Hoax Led to Polygamist Sect Raid

The police raid on the Yearning for Zion polygamist compound in Texas made international news amid accusations of underage marriage, child abuse, and religious persecution. Hundreds of children were taken from their families and relocated to foster homes across the state. But one little detail has been largely overlooked: the raid—resulting in the largest child custody case in American history—was based on a hoax.

The investigation began when a sixteen-year-old girl named Sarah called a crisis hotline. Sarah said she lived at the compound and had been beaten and raped by her fifty-year-old husband. Based on these phone calls, police raided the ranch on April 3, 2008, to rescue Sarah and other girls. Authorities found over 400 children, but Sarah did not seem to be among them.

Police later traced the calls to a thirty-three-year-old Colorado Springs woman named Rozita Swinton. Swinton had been previously arrested for making a false report and accused of posing as "Jennifer," sixteen, who called 911 to report that her father had locked her in a basement for days. Swinton may also have posed as thirteen-year-old Dana Anderson, who claimed she was being sexually abused by her pastor and raped by her father. There is no evidence that Sarah, Jennifer, or Dana exist. Swinton remains a "person of interest" in the case but has not been charged in connection to the raid.

False reports of any kind can have serious consequences. Time and resources spent on hoaxers and liars are diverted from real crime victims.

There are dozens of false reports made to police each week across the country, from fake car thefts to robberies and assaults. Motives for falsely claiming to be the victim of a crime vary widely, but as this case shows, false reports of any kind can have serious consequences. Time and resources spent on hoaxers and liars are diverted from real crime victims. While false rape claims are rare, they happen more often than most people realize. The same is true for hoaxed abduction claims, which occur every week or two in the United States (see "Police, Psychics Search for 'Abducted' Runaway Bride," SI July/August 2005).

Victim's rights groups rarely denounce false assault claims, partly because some counselors believe that acknowledging them makes real victims less likely to report the crime (though there are no studies confirming this). Nor is there any evidence that police or the public take real victims less seriously following hoaxed assault claims. Each report must be thoroughly investigated, and everyone knows that just because one person lied about a crime doesn't mean that someone else did.

And what of the Yearning for Zion children? The case became a colossal embarrassment to the Justice Department, and in early June the state Supreme Court ruled (largely because Sarah could not be found) that the State's seizure of the children was not justified, and the children were returned to their parents. The investigation and criminal case continues, but the false assault claim may end up hurting the children since Sarah's story triggered the raid. If the abuse allegations are real—and Sarah isn't—the government will have a difficult time prosecuting anyone at the compound for child abuse. The hoax may allow real child abusers to escape punishment, leaving innocent children as the littlest victims of false reports.

—Benjamin Radford

Women and children from the YFZ Ranch, the compound built by polygamist leader Warren Jeffs, are moved by bus to San Angelo, Texas, on Sunday, April 6, 2008. (Khampha Bouaphanh/Fort Worth Star-Telegram/MCT) [Photo via Newscom]

Benjamin Radford, managing editor of SKEPTICAL INQUIRER, *wrote about faked crimes in his book* Media Mythmakers: How Journalists, Activists, and Adver-

No Safe Level? Science and Secondhand Smoke

Are the dangers of secondhand smoke being exaggerated by anti-smoking groups?

Since the Surgeon General's 2006 report warning about secondhand tobacco smoke, municipalities across America have been busy passing smoking bans in bars, restaurants, and other public places, some of them outdoors—and sometimes even in places traditionally regarded as private, such as apartment buildings and cars. As justification, they point to the Surgeon General's conclusion that "the scientific evidence indicates that there is no risk-free level of exposure to secondhand smoke."

But a few researchers and analysts are expressing doubts about this claim, especially for brief exposures to secondhand smoke. The Surgeon General "misleadingly suggests to the public that a brief exposure to secondhand smoke is enough to cause a heart attack," said Michael Siegel, a physician and tobacco researcher at Boston University. "Anti-smoking groups have instead tried to convince people that you have a risk of dropping dead just walking down a street" exposed to wafts of secondhand smoke, as at a bus stop.

There is little doubt that chronic exposure to secondhand smoke is dangerous, and Siegel does not disagree. An estimated 49,000 nonsmoking Americans die each year from it, as do about 500,000 people across the globe—one in ten tobacco-related deaths. The burden is especially heavy on women and children—thirteen times greater in households allowing smoking inside, according to a recent global study by Heather Wipfli and colleagues at Johns Hopkins Bloomberg School of Public Health. While American's exposure to secondhand smoke has fallen by about 70 percent since the late 1980s, it is rising along with smoking rates in most other places around the world. In China, 70 percent of men now smoke.

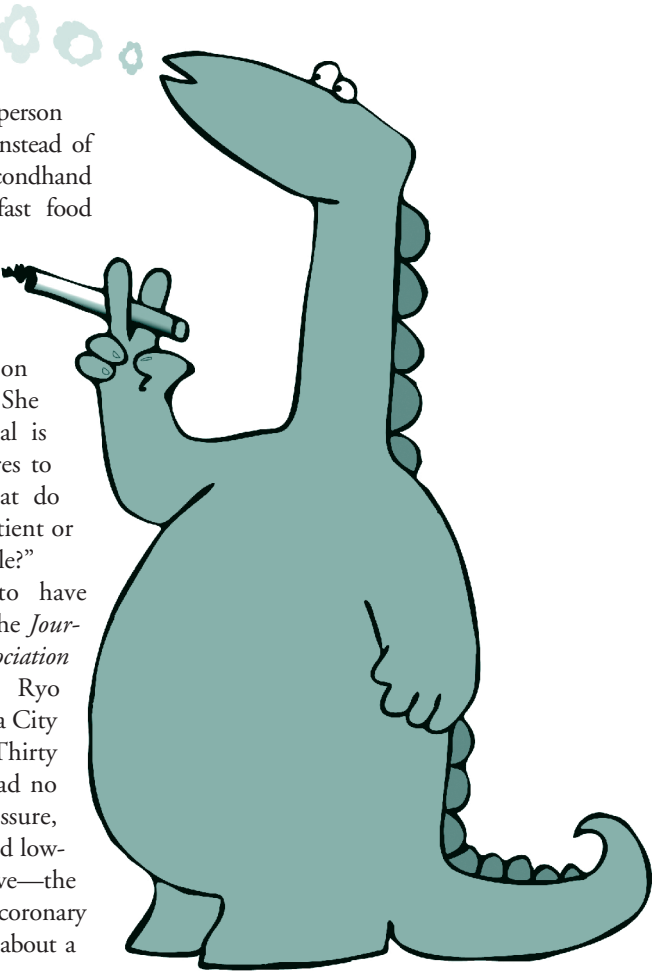
But, Siegel claims, the dangers of low-levels of secondhand smoke have been blown out of proportion by anti-smoking groups and governments and are not supported by scientific evidence. In a recent paper in *Epidemiologic Perspectives and Innovations* and on his blog, he's documented dozens of claims by groups such as Americans for Nonsmokers' Rights, where the claim is repeated dozens of times without, he says, important qualifications.

"What I'm taking issue with is the claim that an otherwise healthy person's exposure to SHS [secondhand smoke] can actually cause heart disease or a heart attack." The only people at risk, he says, are small infants, those with asthma, and those with advanced heart disease. In the latter case, he says, a person should get their arteries fixed instead of avoiding the last trigger of secondhand smoke—or avoid a high-fat fast food meal.

"I disagree with him," says Cynthia Hallett of Americans for Nonsmokers' Rights. "We base our research on the Surgeon General's report." She conceded that every individual is not at risk from brief exposures to secondhand smoke. "But what do you tell the chronic cardiac patient or someone who is very susceptible?"

Some confusion seems to have sprung from a 2001 study in the *Journal of the American Medical Association* of Japanese nonsmokers by Ryo Otsuka and colleagues at Osaka City University Medical School. Thirty minutes of passive smoking had no effect on heart rate, blood pressure, or mean arterial pressure but did lower coronary flow velocity reserve—the ratio of maximum to basal coronary flow velocity—decreasing it by about a fourth in exposed nonsmokers. But Siegel said that this only means the endothelial cells lining the artery show some dysfunction, not that blood flow to the heart is actually decreased.

Siegel is not making many friends in the scientific community, although his research has been funded by the National Cancer Institute and the Flight Attendant Medical Research Institute. (He has never received any grant or other funding from the tobacco industry.) "I think the guy's a complete lunatic," said Stanton Glantz, a Professor of Medicine and Director of the Center for Tobacco Control Research and Education at the University of California at San Francisco. "Nobody has said that if you



walk by a smoker you'll drop dead. He's doing what the tobacco companies used to do."

The effects of brief exposures to secondhand smoke have been shown to cause the accumulation of atherosclerotic plaque, said Glantz. The function of blood platelets, the blood cells responsible for clotting, can change after as little as thirty minutes of exposure to secondhand smoke by a healthy adult, and twenty-four hours later the platelets do not return to their base level of functioning. "It's not clear how little exposure matters," Glantz said.

But, Siegel counters, that process takes decades, not just a few years, let alone a few minutes. "It's very rare to see even active smokers in their twenties develop heart attacks." Siegel also takes issue with studies showing that heart-attack rates dropped shortly after some municipalities instituted smoking bans in restaurants and bars. In one recent paper in the journal *Circulation*, Italian researchers found a reduction in acute coronary events of 11.2 percent in thirty-five- to sixty-four-year-olds after a nationwide ban of all smoking in public places in January 2005. Studies have shown similar results in Montana, Colorado, France, and other places.

But, Siegel says, the heart-attack rate in Italy was already dropping before the smoking ban, about 6 percent per year, the same found after the ban. Francesco Forastiere of the Department of Epidemiology at the Instituto Superiore de Sanitá in Rome admits that the study has its limitations, especially the lack of a control group with no smoking ban, but contends that after controlling for confounding variables, the decrease observed is statistically significant.

No one, including Siegel, doubts anymore that secondhand smoke is dangerous, especially for some, and especially for those exposed regularly. And it is significantly more dangerous in terms of heart disease than lung cancer. But decisions to eliminate every smoky waft from public and outdoor areas may ultimately have more to do with aesthetics than with science.

—David Appell

David Appell is a science journalist in Port-

The Amazing Randi Strikes Again!

The Flamingo Hotel and Casino in Las Vegas was the site of the sixth Amaz!ng Meeting, James Randi's more-or-less annual conference. About 900 people from all over the world attended this year.

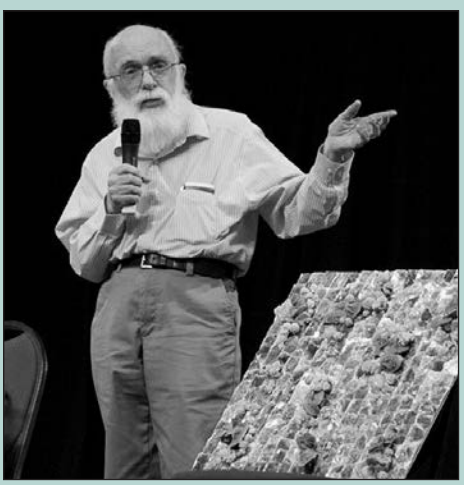
The keynote speech was given by Neil deGrasse Tyson, astrophysicist and director of the Hayden Planetarium at New York's Museum of Natural History. He discussed a variety of subjects, pointing out that science education is not just an issue in debates about evolution and creationism but is fundamentally lacking in the general public. His talk was enthusiastically received, and several women in the audience commented that if all scientists looked and talked like "Dr. Dreamy," the level of scientific literacy among women would skyrocket.

The Amazing Randi, looking as vibrant as ever, was here, there, and everywhere as his small staff ably pulled off complex conference logistics. Ironically, Randi nemeses Sylvia Browne and John Edward were both performing their psychic medium acts in Las Vegas at the same time as the Amaz!ng Meeting. I hoped one or both would show up at the meeting to finally claim Randi's prize, but neither did.

Adam "Mythbusters" Savage was on hand to regale the audience with tales of his impressive (if vaguely unnerving) attention to detail in his quest to create an exact (and I mean *exact*) replica of the Maltese Falcon used in Humphrey Bogart's famous film. Magician/skeptic/*Bullshit!* artists Penn and Teller took some questions and answers as well. Entertainment was provided by skeptical musician George Hrab (who was interviewed in the December 2005 *Skeptical Briefs*) and humanist rapper Greydon Square. Banachek performed his amazing mentalist act, and Arthur Benjamin did his "mathemagic" show.

Matthew Chapman, Darwin's great-great grandson and author of *40 Days and 40 Nights: Darwin, Intelligent Design, God, OxyContin, and Other Oddities on Trial in Pennsylvania*, spoke about the Science Debate 2008 effort to introduce science into the current presidential debates (for more on this, see "Clarke, Cognition, and The Presidential Campaign" Editor's Note in the July/August 2008 SI).

Phil Plait, author of *Bad Astronomy*, gave an entertaining survey of bad astronomy topics, summing it up with a pithy, "The universe is cool enough without making up crap about it!" Speaking of the famous "god of the gaps" view of theism, *Skeptic* editor Michael Shermer asked, "Why should the gaps be filled by anything, much less a god?" Sharon Begley, *Newsweek* science editor, discussed scientific illiteracy. She noted that while the absolute number of people who believe in evolution is fairly high (depending on how you phrase the question), perhaps the most disturbing statistic is the rise in people who are "unsure" if evolution is true.

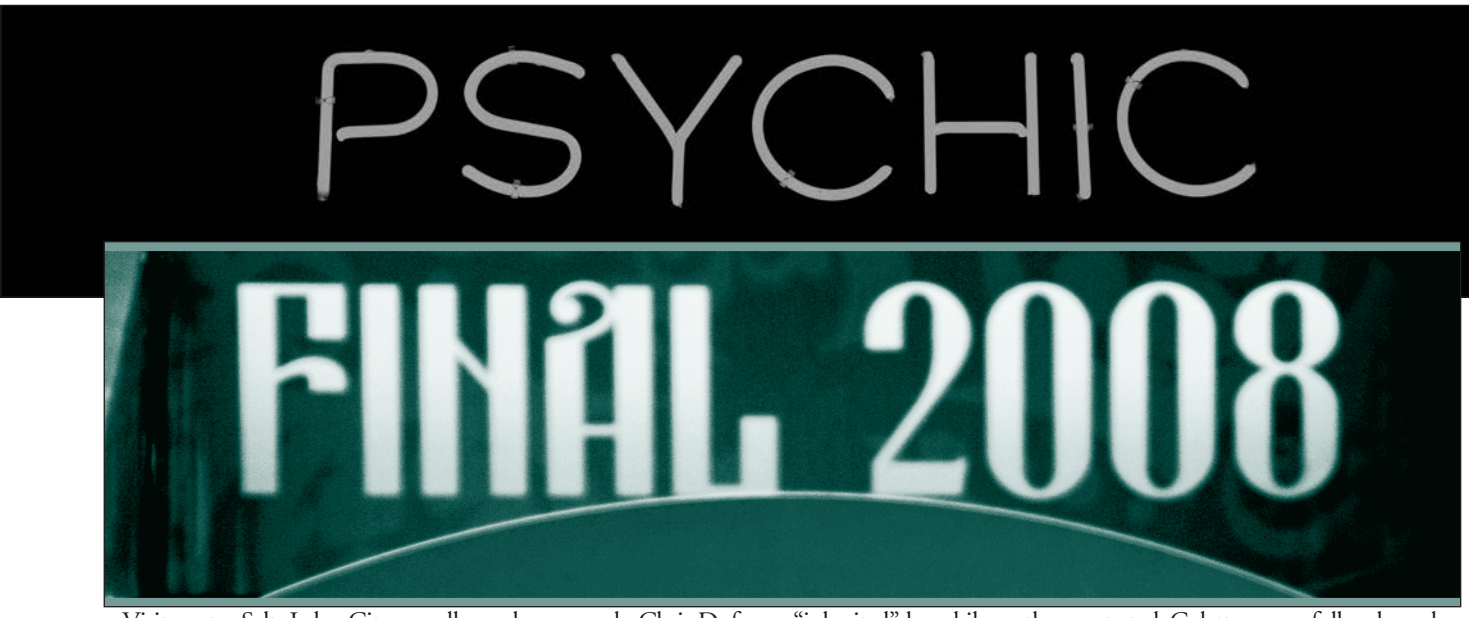


James Randi

The ever-effervescent Prof. Richard Wiseman and Tracy King, both from England, conducted the world's largest spoon-bending experiment with over 800 TAM participants. The result will be broadcast on YouTube in the coming weeks. Other guests included Dr. Steve Novella (longtime researcher and host of the Skeptics' Guide to the Universe); Derek and Swoopy (of the Skepticality podcast); P.Z. Myers (biology professor and blogger); and Dr. Ben Goldacre (medical doctor and writer).

For those of you who have been asking about a CSI/SKEPTICAL INQUIRER conference, stay tuned for an announcement!

—Benjamin Radford



Finally, Sylvia Browne's Final Tour

Visitors to Salt Lake City usually make the pilgrimage to the headquarters of the Church of Jesus Christ of Latter-Day Saints. On a recent trip there I not only visited Temple Square but also attended "Temples on the Other Side," a farewell lecture by "psychic" Sylvia Browne. The breathless promotional copy read:

> Do you ever wonder what it's like when you leave this world and cross over to the next? Will you see your loved ones? Will you examine the life you led here on Earth? How will you fill your time? In this farewell lecture, world-renowned psychic and best-selling author Sylvia Browne will reveal new and fascinating information about the many temples and halls that exist on the Other Side and how you can actually access them through special meditative techniques. Now, as the veil between worlds is thinning, take this rare farewell journey with Sylvia to explore these many temples and how their wisdom can help you with your current challenges.

After decades of personal appearances on television and in public, Sylvia is retiring from the live-lecture circuit; but she isn't retiring altogether. She plans to dedicate her time to writing books, presenting courses, and receiving clients at her home in California. "Now you can come to me and my son," she said in her trademark croak. Chris Dufresne "inherited" her abilities, she said. "He's the second best psychic around!"

The recent Amaz!ng Meeting 6 in Las Vegas drew an audience of 900 people. In comparison, on this one leg of her national tour, Sylvia performed before a sold-out crowd of 3,000. The pre-show atmosphere was similar to a concert, and the enthusiastic audience had packed the hall three hours beforehand. One dedicated husband had waited in line since early that morning.

"Intuitive" Colette Baron-Reid provided the warm-up act. A selection of audience members received readings on the basis of random symbols that "appeared" to Colette. These ranged from the ambiguous, "A gun, a mountain, and Daniel," to the peculiar, "Who is Cornelius the alcoholic?" "I'm an alcoholic!" someone volunteered excitedly.

The readings were vague, inaccurate, or both. Baron-Reid told a sobbing woman, "Your father takes care of you from the other side." Looking confused, the woman responded, "But he's not dead, only sick!" Shifting gears, the shifty psychic explained, "I mean, he takes care of you now, and always will." She informed a group of elderly ladies that one of them would soon fall pregnant. "We're all grandmothers!" they protested. Colette successfully salvaged the prophecy: "Oh well. I see a pregnancy. You guys can work that one out!"

Thunderous applause, whistling, cheering, and tears accompanied Sylvia's regal entrance. She received a standing ovation, while people darted to the stage to photograph her up close. When the room settled down and Sylvia was seated, she began her lecture, "I've studied every religion. I've read the Bible, the Talmud, the Book of Mormon, everything. I can simmer it all down to this; love god, do good, shut up and go home." This was met with uproarious laughter and clapping. "It all boils down to that, then we exit this hell hole. There's no hell, there's no devil. I married him!"

Sylvia has an eclectic belief system: "Take what you like and leave the rest behind." She shared her chaotic philosophy, plucked from the tenets of Christianity, Buddhism, the New Age, and even global-warming theory. "We always were, because god always was. We won't always be. We won't be here in ninety years, but the world will."

This was sit-down comedy full of one-liners interspersed with dark humor about her legion of ex-husbands and dysfunctional family, "my family lives until

IGNITE THE ADVENTURE

The NEW FUTURE Fund

"Knowledge is an unending adventure at the edge of uncertainty."

– Jacob Bronowski, scientific polymath

For a more rational tomorrow ... and the future of *Skeptical Inquirer* ... please support the new phase of the Center for Inquiry New Future Fund

Across our world, forward-thinking men and women have recognized the scientific paradigm as their surest guide for sound thinking and living. For them knowledge is the greatest adventure. Today the Center for Inquiry movement strives to keep the adventure of knowledge accessible to all. To defend science, reason, freedom of inquiry, and human values in an ever-changing world, we must adopt new methods ... new approaches. To realize tomorrow's ambitious goals, we must expand our organization.

The New Future Fund is an audacious, multiyear $26 million campaign to fund program needs, capital expansion, and endowment for the Committee for Skeptical Inquiry (CSI) and the Center for Inquiry.

In this new phase the focus turns to:

- **Outreach and education: publishing, media relations, personal outreach, and more**
- **Influencing public policy through our Center in the nation's capital**
- **Enhancing the Committee for the Scientific Examination of Religion (CSER)**
- **The Naturalism Research Project: library expansion, research fellowships, and other initiatives to spur exploration of the naturalist tradition**
- **Transnational development: reaching beyond borders through the United Nations and direct activism around the globe**

As always, the New Future Fund supports new and established programs, including *Skeptical Inquirer* and CSI's vital media and public education work. Because our work is so important, please make your most generous gift today to support program expansion. By pledging a larger gift over a three- or four-year period, you may find a significant contribution more affordable. Our development staff stands ready to answer questions you may have about asset transfers, planned giving arrangements, and the like. All gifts are fully tax-deductible to the extent allowed by law.

To promote and defend reason, science, and freedom of inquiry in all areas where they are endangered.
CENTER FOR INQUIRY
Washington
www.

Toni Van Pelt, Paul Kurtz, and Ron Lindsay (standing); Lawrence Krauss, David Helfland, and Nobel Laureate Paul Boyer (seated) introduced the Declaration in Defense of Science and Secularism at the inaugural press conference of the Center for Inquiry/Office of Public Policy in Washington, D.C.

Local leaders, campus activists, and students from around the world came together at CFI's Summer Session.

Latin American and U.S. skeptical activists met at the CFI-sponsored First Iberoamerican Conference on Critical Thinking in Peru.

The new Naturalism Research Project will more than double our library facilities and create a collegial setting for scholarly dialogue and research.

For more information or to make a gift, return the tear-out card facing this ad or contact:

Center for Inquiry
Department of Development P.O. Box 741, Amherst NY 14226-0741
1-800-818-7071 | development@centerforinquiry.net

CENTER FOR INQUIRY

CSI Committee for Skeptical Inquiry

someone has to kill them!" She recounted personal anecdotes to illustrate her beliefs: "I hate looking at myself in the mirror, but we're all thirty years of age in the afterlife." Paradoxically, she also believes in reincarnation, "A guy told me he hates Volkswagens. I said, 'That's ironic, in a previous life, you *were* one.'" Sylvia is a greater curmudgeon than any skeptic, "A skeptic said to me, 'If you're so goddamn psychic, what's my name?' 'Asshole,' I said. 'By the way, your name's Mark.'" She is so cynical I'm surprised she believes herself. Perhaps she doesn't.

Sylvia raffled our ticket numbers for psychic readings. She performed a generous thirty readings (for the price of 3,000). I was poised to inquire about her reluctance to undertake James Randi's Million Dollar challenge despite accepting to be tested back in 2001, but I wasn't chosen. Lined up to receive psychic communion, everyone was granted one question of the seer. In a fast-paced cattle call of readings for reverential believers, Sylvia and her spirit guide Francine barely needed to use mentalist techniques.

She provided earthly advice: "I'm in a bad living situation," complained a woman. "Move!" Sylvia commanded simply. She made vague, nonverifiable predictions: "Will I find another lady?" "Yes. Within the next two years. Her name is Meredith." She dispensed pat diagnoses for common, nonspecific health complaints: "I have a strange health issue," a woman reported. "I know," replied Sylvia, "Get your thyroid checked." Some readings exploited popular sympathy: "There isn't one 9/11 soul who didn't make it." But stock readings were her staple: "Your father's here with me now. He's proud of you." If someone queried her reading, she'd reply indignantly, "That's what I said!" This "clarification," and the audience's laughter, would confuse and embarrass the dissident into silence.

The lecture closed with a meditation session. New Age music began, everyone closed their eyes (except me), and Sylvia guided us to "heal" ourselves. The end was nigh, and I realized that the advertised lecture questions hadn't been answered. But it was too late, Sylvia was leaving the building. "I love you, Sylvia!" screamed a man frantically as she stood to leave the stage. "I love you, too," she replied. As she received another standing ovation, she wooed, "I love you all. See you on the other side!"

—Karen Stollznow

Karen Stollznow has her PhD in linguistics from the University of New England, Australia. She is a lecturer, researcher, and investigator of the pseudoscientific and paranormal living in the San Francisco Bay Area. She is associate editor of The Skeptic *(Australia).*

Psychic's False Sex Abuse Claim Threatens Family

Psychics are wrong about things all the time; that's no news to our regular readers. But while many times the misinformation is inconsequential, other times the psychics' false claims have real-world—even life-changing—consequences.

Consider the case of Colleen Leduc, a single mother of an autistic eleven-year-old girl in Barrie, Ontario. On May 30, she left her daughter Victoria at her elementary school. A few hours later, Leduc got an urgent call from the school, asking her to return immediately. When she did, Leduc was confronted by the principal, Victoria's teacher, and a teacher's aide (educational assistant, or EA). Puzzled and alarmed, Leduc asked what was going on. The group told her that they believed that Victoria was being sexually abused. They had contacted the Children's Aid Society (the Canadian version of Child Protective Services), a case file was opened, and Leduc was told her daughter might be taken from her "for her own safety."

Leduc was shocked when she heard why: "The teacher looked at me and said: 'We have to tell you something. We have to tell you that Victoria's EA went to see a psychic and the psychic asked her if she works with a little girl with the initial V. When the EA said yes, the psychic said, 'Well, you need to know that this girl is being sexually abused by a man between the ages of twenty-three and twenty-six.'" The EA reported it to the teacher, who then went to the principal, and so on.

Because Victoria is autistic, the child couldn't speak for herself about the alleged abuse. Leduc didn't believe the psychic's allegations and told them that they could not be true since her daughter seemed normal (for an autistic child) and did not even come in contact with any men between those ages. The principal, teacher, and aide insisted that they had a legal obligation to act on any information about suspected abuse—even a vague tip from a psychic.

And there the case would have stood: an anonymous psychic's "information" against the word of Victoria's mother. Except in this case, Leduc could prove for a fact that the psychic was wrong. Concerned for her daughter's safety because of Victoria's disability, Leduc had equipped her with a GPS tracking system and a continuous audio recorder. A review of the audio proved that at no point was Victoria sexually abused in any way by anyone.

The case was eventually closed, but Leduc was stunned that it had gotten as far as it did based on such dubious evidence. As for Leduc, it appears that her terrible ordeal is finally over, unless the school decides to consult another psychic. Or, she says, "they might want to take out a Ouija board or hold a séance, I'm not sure."

The psychic has neither been identified nor arrested for providing a false report of a crime. According to WhatsTheHarm.net, belief in the paranormal has caused at least 2,996 deaths, 222,414 injuries, and over $259,801,000 in economic losses. There are many other high-profile examples of psychic misinformation, such as in March 2004, when a psychic falsely claimed that a bomb was aboard an American Airlines flight in Florida. The claim forced cancellation of the flight, and all 128 passengers were placed on later flights, most delayed until the following day (see "Psychic's False Bomb Tip Cancels Flight," SI, July/August 2004).

—Benjamin Radford

The Eighth Gathering for (Martin) Gardner

Who attends these gatherings? What takes place? How do they serve as a tribute to this remarkable man?

RAY HYMAN

The Eighth Gathering for Gardner (G4G8) took place at the Ritz-Carlton Hotel in Atlanta, Georgia, from March 26 through March 30, 2008. A Gathering for Gardner occurs in Atlanta every two years, celebrating the many facets of the polymath Martin Gardner. Martin, who rarely attends public meetings, attended the first two gatherings. Although he has not come to the latter six meetings, the organizers make sure that he receives a full report of all the presentations.

Attendance is by invitation only. To receive an invitation, a person must have some connection with Martin and share one or more of his myriad interests. At the earlier gatherings, most of the attendees were chosen by Martin himself. Since then, the criteria have become more inclusive. People are invited if their activities have been influenced or inspired by Martin and his writings. Most of the attendees have not met Martin personally, but many of them have communicated with him. Among many other amazing qualities, Martin somehow manages to engage in extended correspondence with hundreds of admiring disciples.

Ray Hyman is professor emeritus of psychology at the University of Oregon and a fellow of the Committee for Skeptical Inquiry. Both he and Martin Gardner are original members of CSI's Executive Council. (Gardner is now on emeritus status but still writes regularly for SI.)

I first met Martin in 1950 at a "sodality" at Bruce Elliot's apartment in Greenwich Village, New York. Bruce Elliot was a magician who held these sodalities every Friday night. Every major New York magician usually attended. I was a young college student in transition from finishing my undergraduate degree and beginning my graduate work at The Johns Hopkins University in Baltimore. Because I had recently published some of my creations in a magic magazine, I got the attention of some of the New York magicians. They invited me to attend Bruce Elliot's sodality whenever I came to New York. I made the trip to New York just to attend.

At my first sodality I was dazzled by the gathering of famous magicians whom I knew by reputation but had never met in person. I met Jay Marshall, Dai Vernon, and other luminaries, including Martin. Because Martin and I shared interests, not only in magic but also in skeptically evaluating paranormal and other pseudoscientific claims, we became good friends. We began a correspondence that still continues. Later, when I worked for General Electric Company at its New York headquarters from 1958 through 1961, Martin and I were neighbors. We lived only a few miles from each other and frequently had dinner together.

Martin's mastery of magic; philosophy of science; recreational mathematics; optical illusions; the literary subtleties of L. Frank Baum, Lewis Carroll, and Arthur Conan Doyle; debunking pseudoscience; theology; and other topics have always impressed me. However, having attended all of the eight Gatherings for Gardner, I have become even more awed with the variety of subjects to which he contributed and for which many disciples credit him for inspiring. It is beyond my comprehension how one individual, without benefit of computers or assistants, can consistently write books, articles, reviews, and commentaries on so many different topics and at the same time maintain continuing correspondence with so many individuals around the world. And just as amazing is that the quality of the content of his writing and correspondence is consistently of the highest caliber.

So who attends these gatherings? What takes place? How do they serve as a tribute to this remarkable man? At the most recent gathering, registration began on Wednesday evening. Registrants assembled in many small groups. In some of the groups, individuals displayed new puzzles or challenged one another with puzzles. In other groups, magicians demonstrated new tricks. Discussions on a variety of topics were held. And, of course, participants

reminisced about some of the previous attendees who have sadly passed away, such as Jerry Andrus and Jay Marshall. Very soon, news spread that Lennart Green, the dazzling magician and puzzle devotee who has been a fixture at all previous gatherings, would not be able to make it to this one. He had broken his hip on his way to the airport in Sweden. Although unable to attend, word reached us later that he was doing well.

Three hundred people registered for G4G8. In addition to participants from the United States, attendees came from England, Scotland, the Netherlands, Israel, Serbia, Italy, Japan, China, Denmark, Germany, Portugal, Spain, Hungary, and Canada. I suspect that several other countries might also have been represented.

The formal conference began at 8:30 Thursday morning, and later that evening we had dinner at the Sun Dial Restaurant, which sits atop the tower of the Westin Peachtree Hotel. The restaurant continually rotates so that each diner obtains a 360-degree panoramic view of Atlanta and its surroundings. We could see many boarded-up windows and other traces of the recent tornado that had swept through downtown Atlanta. Several magicians went from table to table entertaining the attendees. These included Dan Garrett, Thomas Fraps and Pit Hartling from Germany, and several others.

On Friday afternoon, chartered buses took the participants to Tom Rodger's unique house for a Japanese lunch and dinner. Tom, who is the primary coordinator of the gathering, hired Japanese architects to construct his house in authentic Japanese style. His environs were landscaped with Japanese gardens, ponds, waterfalls, a tea house, and the like. Visitors were treated to Japanese Taiko Drumming, the erection of a group sculpture, a puzzle hunt, and a special performance by a dancer from Japan, as well as street magic.

The dinner on Saturday at the Ritz-Carlton featured a tribute to the late Jerry Andrus as well as a magic show performed by Dan Garrett (filling in for Lennart Green), Pit Hartling, Thomas Fraps, and Mark Mitton. The mathematician Arthur Benjamin performed his very impressive and entertaining lightning calculator act.

A cube jiggle presented at the eighth Gathering for Gardner in Atlanta.

Throughout the gathering, an exhibition room and sales room were available for participants. The exhibition room displayed rare puzzles, puzzles made out of special woods or precious metals, kinetic art, optical illusions, and other interesting items. The sales room provided the opportunity to buy a variety of puzzles, books, and gadgets related to the various themes of the gathering.

The major focus of the gathering was the presentations—ranging in length from ten to thirty minutes (each speaker who finished before his or her allotted time was awarded one dollar). More than ninety presentations were given. At previous gatherings, the range of topics—all related to Martin Gardner's interests—included the construction of mazes, juggling, joggling (juggling while racing on foot), analysis of ancient puzzles, introduction of new puzzles, knot theory, the history of magic, mathematical magic, critiques of paranormal claims, paradoxes, new mathematical proofs, kinetic art, new and old optical illusions, various themes based on Escher's art and geometry, specially designed Frisbees, demonstration of a model aircraft kept aloft by the slight breeze created by a person walking, and other delights.

This year's contributions were no less varied. Several presentations focused on different ways to make mathematics fun for students—an endeavor that is dear to Martin's heart. At one extreme, we had some rather arcane presentations of new mathematical proofs, such as one that dealt with a new computerized proof. Thomas Banchoff showed an excerpt of *Flatland: The Movie.* Several presenters provided proofs for various puzzles. We had talks on soap bubbles, the Knight's Tour, puzzle food, Sudoku, and puzzle locks from India.

Adam Atkinson from the United Kingdom discussed "Applications of Vampires in Law and Medicine." He used what we know about vampires from shows such as *Buffy* and *Ultraviolet* to suggest various ways they could be used to solve legal and medical problems. George Bohigian explained that in ancient times the ability to recognize and identify constellations and celestial bodies was used to test vision. The ability to detect the separation between

Compass Points, a fifty-two-inch sculpture designed by George W. Hart, is composed of sixty stainless-steel pieces, 120 brackets, and 510 nuts and bolts.

Participants of the Gathering for Gardner pose next to the sculpture they helped assemble.

the two stars that make up the double star in the Big Dipper was a common test. Bohigian showed how this ability correlated with the 20/20 line in the current Snellen visual acuity test. Arthur Benjamin performed and then taught us a wonderful card trick that depends on a subtle mathematical principle. And Michael Ecker regaled us with a survey of fun paradoxes such as "going back in time and killing both of your parents before they met."

Peter Lamont, from the University of Edinburgh, discussed "The Rise of the Indian Rope Trick." His presentation was an interesting addendum to his book *The Rise of the Indian Rope Trick: the Biography of a Legend* (reviewed in SI, November/December 2005). According to historians, the trick was witnessed by Marco Polo, and the Viceroy of India offered in 1875 a large reward for a single performance of the trick. Lamont's careful research revealed that neither of these statements is true. The Indian Rope Trick, the stimulus for endless debates and speculation, was created as a journalistic hoax by John Wilkie that was published in the *Chicago Daily Tribune* on August 8, 1890. It was quickly picked up by newspapers around the world.

I was especially intrigued by the physicist David Finkelstein's "Decoding Dürer." When Dürer created his famous engraving *Melencolia* in 1514, he was one of the most gifted artists of his time. He was also, like Leonardo Da Vinci, talented in many other fields, such as technology, philosophy, and the like. Many, including myself, have found Dürer's engraving fascinating because of its many occult, Biblical, and other symbols. Among other images in the engraving is a 4 3 4 magic square. Many art and other scholars have speculated about the message they think Dürer was trying to convey. Finkelstein argues that the engraving contains a "double message."

"The overt message . . . is that absolute truth and beauty are inaccessible to the artist/scientist, causing the melancholy of the legend. The covert message, however, is that Natural Philosophy, Gateway I to Heaven, is superior to Mathematical and Theological Philosophy. The innocuous admission of the limitations of science veils a manifesto of the impending scientific revolution that would otherwise have been a capital offense," said Finkelstein. His analysis is compelling, but I suspect many scholars will not buy it.

As you can surmise from this small sample of the content of the presentations, the topics not only ranged widely but all dealt with challenging puzzles, paradoxes, mysteries, and other themes to which Martin Gardner has contributed to or inspired others to contribute to. Each of the presenters gratefully acknowledged that they were inspired by Martin in pursuing these themes further.

A Special Afterword from Martin Gardner

First let me thank Tom Rodgers for having started the Gardner Gatherings and nurturing them into a unique meeting of persons interested in recreational mathematics, mechanical puzzles, and conjuring. I recently received a letter from the well-known IBM mathematician and writer Clifford Pickover telling me how much he enjoyed his first visit to the (eighth) gathering.

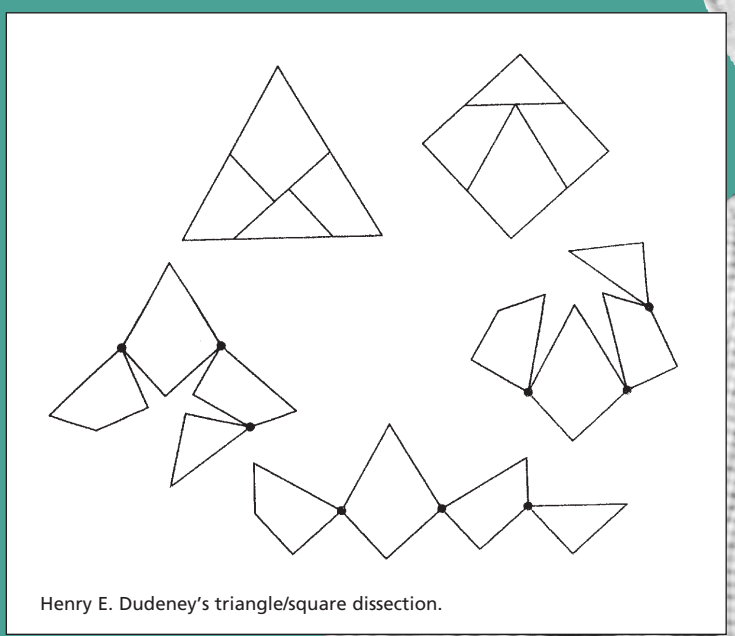
And of course I am equally honored and grateful to Ray Hyman for his account of this year's gathering. I wish I could have been there and renewed acquaintances with so many good friends in the worlds of mathematics and magic. Ray mentions that several mathematicians gave proofs of unusual theorems. Allow me to cite one—an unexpected proof that was of special interest to me.

In one of my early *Scientific American* columns I reported on the famous discovery by England's great puzzle maker Henry E. Dudeney of a way to slice a square into as few as four pieces such that if made of wood they could be hinged to form a chain that could be unfolded then folded a different way to make an equilateral triangle! Greg Frederickson, a mathematician at Purdue, is the world's top expert on geometric dissections. His latest book, *Plano Hinged Dissections: Time to Fold!* (A.K. Peters 2006), deals entirely with his discoveries of beautiful hinged dissections.

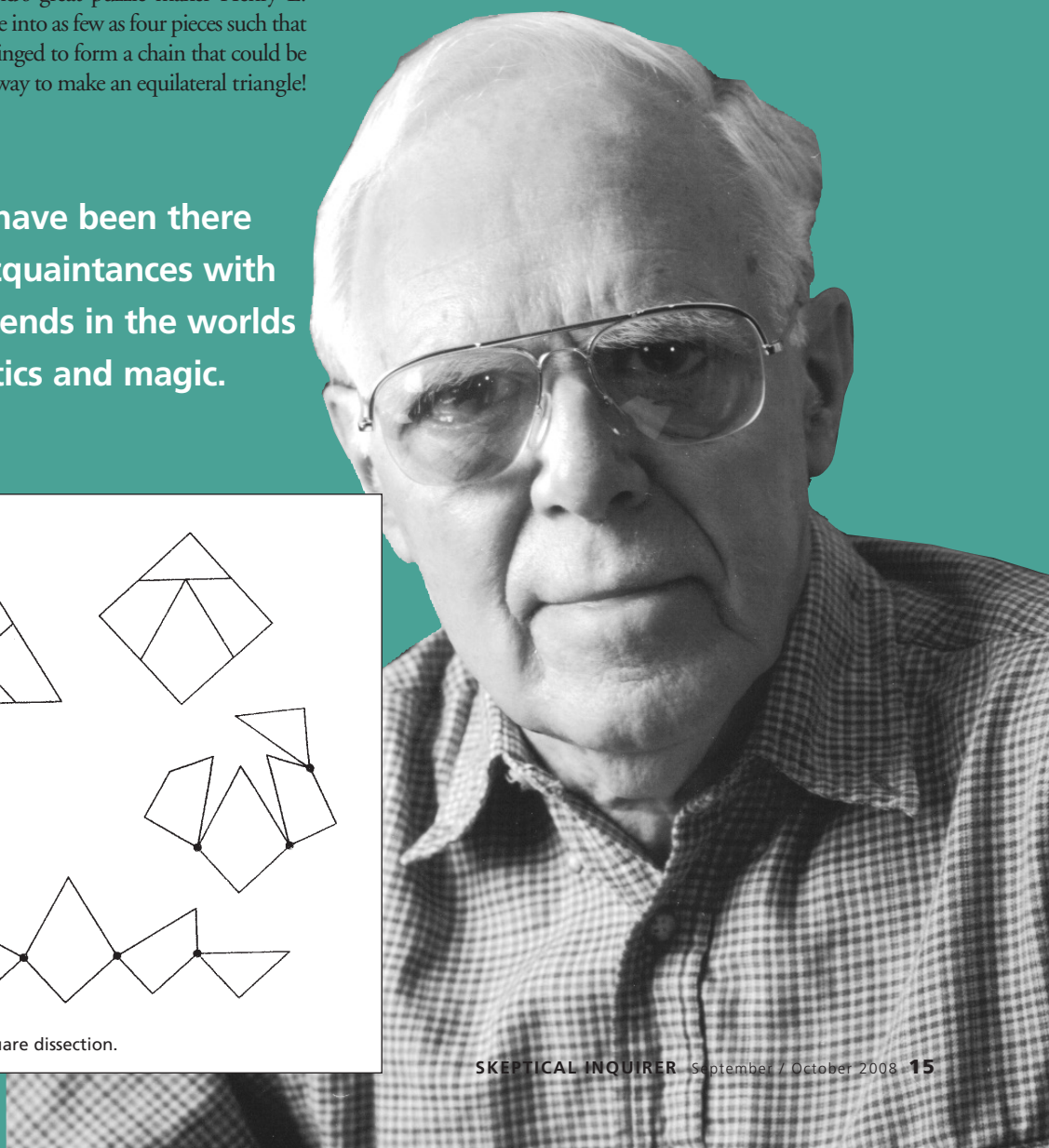
At the last gathering, Erik Demaine, a young computer scientist at MIT, explained his remarkable proof, yet to be published, that *any* polygon of any shape can be cut into a finite number of pieces that can be hinged to form a chain that will fold to make any other given polygon of the same area! It is a great breakthrough in hinged dissection theory. Of course the task, far from easy, is to find a way to make the chain with a minimum number of pieces. I'm told that Demaine's presentation produced prolonged applause.

Thanks, Ray, for bringing back so many happy memories. □

I wish I could have been there and renewed acquaintances with so many good friends in the worlds of mathematics and magic.



Henry E. Dudeney's triangle/square dissection.



Ben Stein's Trojan Horse

Mobilizing the State House and Local News Agenda

MATTHEW C. NISBET

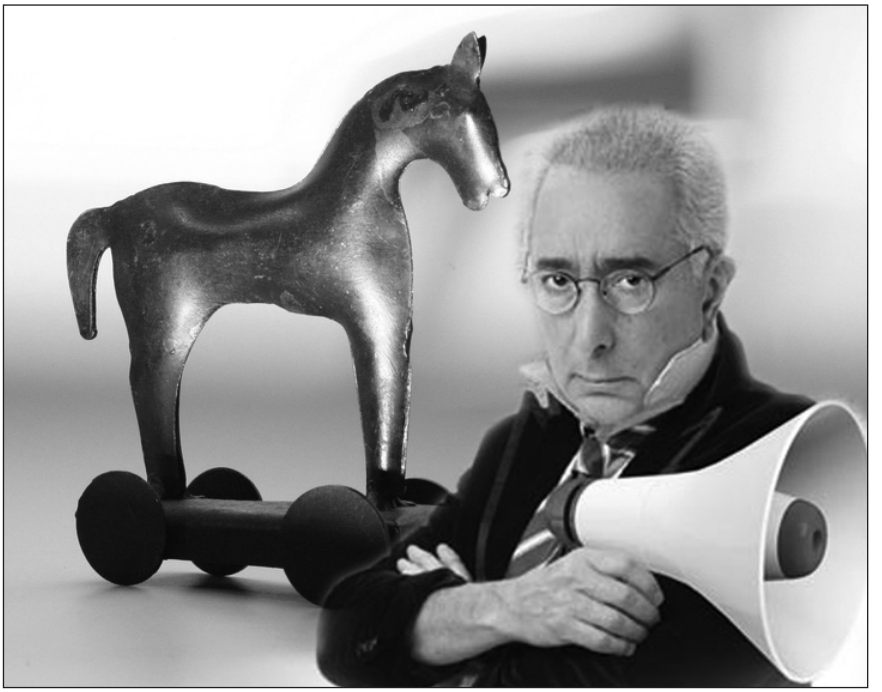
Back in April 2008, as the documentary *Expelled: No Intelligence Allowed* premiered in more than 1,000 theaters across the country, I gathered with friends for a Friday-evening screening in downtown Washington, D.C. The medium-sized Regal Cinemas theater was about 80 percent full, with an audience that appeared to be the typical urban professional crowd for the surrounding arts and entertainment district, a demographic that is more likely to read the *New York Times* at a coffee house on Sunday than to attend church.

As I watched the film and monitored audience reaction, I grew convinced that although *Expelled*'s claims have been thoroughly debunked (NCSE 2008; *Scientific American* 2008; see also the critique in SI, May/June 2008 by Dan Whipple and Nathan Bupp's piece in SI, July/August 2008), the documentary's long-term impact remains dangerously underestimated.

In the film, the comedic actor Ben Stein plays the role of a conservative Michael Moore, taking viewers on an investigative journey into the realm of "Big Science," an institution in which, Stein concludes, "scientists are not allowed to even think thoughts that involve an intelligent creator." *Expelled* outrageously suggests that Darwinism, as Stein calls evolution, led to the Holocaust. He also suggests that scientists have been denied tenure and that research has been suppressed, all in the service of hiding the supposedly fatal flaws in evolutionary theory.

Expelled employs several techniques common to political advertising. First, Stein's narrative relies heavily on the use of metaphor. For example, his version of the "3 A.M. phone call" is to bookend the film with historic footage of the Berlin Wall and a repetitive emphasis on freedom as a central American value. The sinister implication is that "Darwinism" has led to atheism, fascism, and communism. As a corollary, if Americans can join Stein in tearing down the wall of censorship in science, it would open the way to religious freedom and cultural renewal.

Expelled also strategically manipulates emotions while playing to ignorance among movie-going audiences. For exam-



As I watched the film and monitored audience reaction, I grew convinced that although *Expelled*'s claims have been thoroughly debunked, the documentary's long-term impact remains dangerously underestimated.

Matthew Nisbet is an assistant professor in the School of Communication at American University in Washington, D.C.

ple, as a way of triggering anger, Stein misleadingly defines celebrity atheists such as Richard Dawkins, P.Z. Myers, Daniel Dennett, and Christopher Hitchens as representatives of "establishment science." In interviews, as these scientists compare religion to fairies, hobgoblins, and knitting, the implication for viewers is that in order to leave room for God in society, intelligent design (ID) needs to be taken seriously.

In the screening I attended, somewhat predictably there were chuckles and positive laughter in reaction to Stein and audibly negative emotion directed toward the comments of Dawkins and the other scientists. As the film credits rolled at the end, there was even a strong round of *approving applause.*

Expelled's misleading emphasis on atheist punditry as representative of science even had film critics bristling. In reviews otherwise harshly dismissive of the documentary, Jeffrey Kluger of *Time* magazine described Dawkins and Myers's performances as "sneering, finger in the eye atheism," while Justin Chang of *Variety* referred to Dawkins' commentary as "atheism taken to hateful extremes."

There is no way of telling how representative the Washington, D.C., audience might be of the nation at large, although I have observed similar emotional reactions among university students with whom I have tested *Expelled*'s YouTube clips. At various other locations across the country, several bloggers reported that they were the only person in the theater for a Sunday matinee or a weekday evening show. One thing, however, is certain: by documentary box-office standards, *Expelled* has made its mark.

With more than $7.5 million in ticket sales according to the Web site Box Office Mojo, Stein's propaganda film ranks as either the sixth or seventh top grossing public affairs documentary of all time. Only Al Gore's *An Inconvenient Truth*, Morgan Spurlock's *SuperSize Me*, and Michael Moore's *Fahrenheit 9/11*, *Sicko*, and *Bowling for Columbine* have grossed more than *Expelled*. (After adjusting for inflation, add Moore's 1989 *Roger and Me*.)

Premise Media, Inc., the production company that marketed *Expelled*, targeted two key demographics for the film. Predictably, a main segment included evangelicals and social conservatives, with the production company advertising heavily on political talk-radio stations and by way of Christian media and church networks. But in running advertising spots during *The Daily Show* and on *CNN*, the company also hoped to appeal to less religious twenty- and thirty-somethings, an audience more familiar with Ben Stein as a comedic actor and satirist than with the recent political skirmishes over evolution.

Despite these savvy marketing efforts, *Expelled* was unlikely to break the forces of ideological selectivity that have snared even the most successful documentaries. For example, polling data shows that the theater audience for *Fahreinheit 9/11*, which earned $120 million at the box office, skewed heavily liberal and was more likely to live in "blue" rather than "red" counties of the country (Pew 2004). Moreover, a recent study finds that rather than converting movie-goers to support John Kerry during the 2004 election, the effects of the film were most likely to reinforce and intensify already strong anti-Bush sentiment (Stroud 2007). In short, *Fahrenheit 9/11* helped activate and mobilize the existing anti-Bush segment rather than persuade new converts.

Survey data specific to *Inconvenient Truth* and *Sicko* reveal similar selectivity bias and ideological reinforcement (Nisbet 2008; Kaiser 2007). Although similar data is not yet available for *Expelled*, according to news reports, Premise Media's own exit survey data from theaters in six states showed that 80 percent of the film's viewers during opening weekend considered themselves "born again" Christians (Hall 2008).

Since the 2005 Dover court decision, intelligent design had been off the national news radar, yet *Expelled* helped restart the media conversation, at least temporarily.

Yet, *Expelled*'s influence stretches well beyond the theater and any ideological impact on viewers. As I reviewed in a recent report to the Ford Foundation, these indirect influences can be tracked across several different dimensions, with the most important impacts related to the general news and policy agenda (Nisbet 2007).

For example, although many mainstream film critics have savaged the documentary, Stein's arguments have received either uncritical or positive coverage in reviews at Christian or conservative Web sites, in appearances on *CNN with Wolf Blitzer*, ABC's *Jimmy Kimmel Live*, and by way of strong endorsements on conservative talk radio and cable news programs such as Rush Limbaugh, *Headline News'* Glenn Beck, and Fox News' *Hannity and Colmes*.

Since the 2005 Dover court decision, intelligent design had been off the national news radar, yet *Expelled* helped restart the media conversation, at least temporarily. Perhaps most importantly, by way of columns, op-eds, uncritical features, and letters to the editor at local newspapers across

the country, the film offered an opening and a new "authoritative" reference point for ID proponents to once again misleadingly argue that there are holes in evolutionary theory and censorship in schools.

Perhaps most troubling has been the advanced screenings for policymakers, interest groups, and other influentials. *Expelled*'s producers have previewed the film for the Missouri and Florida state legislatures, connecting the film's message to a proposed "Academic Freedom Act" in each state that would encourage teachers to discuss the alleged flaws in evolutionary science. As Stein strategically framed the matter at the screening in Florida: "This bill is not about teaching intelligent design. It's about free speech" (Julian 2008).

With each of these dozens of screenings there has likely been a strong intensification of commitment and emotion among the conservative activist base in attendance along with advocacy training, the raising of money, and the distribution of other resources, such as DVDs and literature. In particular, *Expelled* provides these activists with an increased repertoire of arguments, talking points, and examples to use with neighbors and friends.

There is even the possibility that the screenings helped anti-evolution groups link up with new conservative coalition partners not previously involved in the issue. For example, Stein has shown *Expelled* at several meetings and venues here in Washington, D.C., including a special screening for Congressional staffers.

When the film moves to DVD distribution, expect more of these types of *Expelled* screenings, house parties, and church gatherings across the country, all aimed at mobilizing a political movement in favor of anti-evolution bills. As *Reason* magazine's Ronald Bailey (2008) reports, at an April 15 press conference at the conservative Heritage Foundation, *Expelled*'s financial backer Walt Ruloff said that as many as twenty-six states had been targeted this year with so-called "freedom bills." So far, bills introduced in Florida, Alabama, and Missouri have been voted down while similar bills are still up for full legislative vote in South Carolina and Louisiana (NCSE 2008b).

Over the next few years, *Expelled*'s enduring impact will be to serve as a vehicle for recruiting and mobilizing anti-evolution activists at the state and local level across the country.

Over the next few years, *Expelled*'s enduring impact will be to serve as a vehicle for recruiting and mobilizing anti-evolution activists at the state and local level across the country. The targeted audience will include school-board members, church leaders, legislators, journalists, and other opinion leaders. Shown in its entirety or perhaps more effectively repackaged in 10-15 minute outtakes, these screenings will combine emotionally powerful metaphors with the commentary of various outspoken atheists to manipulate viewers' understanding of the important differences between science, religion, and atheism.

References

Bailey, Ronald. 2008. April 16. Flunk this movie. *Reason*. Available online at www.reason.com/news/show/125988.html.

Box Office Mojo. Gross earnings for documentary genre since 1982. Available online at www.boxofficemojo.com/genres/chart/?id=documentary.htm.

Chang, Justin. 2008. April 11. Review: Expelled: No intelligence allowed. *Variety*. Available online at www.variety.com/review/VE1117936783.html?categoryid=31&cs=1.

Hall, Cheryl. 2008. April 28. Intelligent design documentary creates stir. *Dallas Morning News*. Available online at www.dallasnews.com/sharedcontent/dws/bus/columnists/chall/stories/DNHall_27bus.ART0.State.Edition1.4655452.html.

Kaiser Family Foundation 2008. Awareness and perceptions of *Sicko*. Available online at www.kff.org/kaiserpolls/pomr082707pkg.cfm.

Kluger, Jeffrey. 2008. April 10. Ben Stein dukes it out with Darwin. *Time*. Available online at www.time.com/time/magazine/0,9263,7601080414,00.html.

Julian, Liam. 2008. March 28. Academic anarchy. *Tampa Bay Tribune*. Available online at www2.tbo.com/content/2008/mar/28/na-academic-anarchy.

National Center for Science Education. 2008a. Expelled exposed. Available online at www.expelledexposed.com/.

National Center for Science Education 2008b. Louisiana's latest creationism bill moves to House floor. Available online at www.ncseweb.org/resources/news/2008/LA/66_louisianas_latest_creationism_5_23_2008.asp.

Nisbet, Matthew C. 2007. Understanding the social impact of documentary film. In K. Hirsch's, Documentaries on a mission: How non-profits are making movies for public engagement. A Future of Public Media Project, funded by the Ford Foundation. Center for Social Media, American University. Available online at www.centerforsocialmedia.org/files/pdf/docs_on_a_mission.pdf.

———. 2008. Moving beyond Gore's message: A look back (and ahead) at climate change communications. Committee for Skeptical Inquiry. Available online at www.csicop.org/scienceandmedia/beyond-gores-message.

Pew Internet and American Life Project. 2004. Data memo. Available online at www.pewinternet.org/pdfs/PIP_Politicaldocus.pdf.

Scientific American. 2008. Expelled: No intelligence allowed: *Scientific American*'s take. Available online at www.sciam.com/article.cfm?id=sci-am-reviews-expelled.

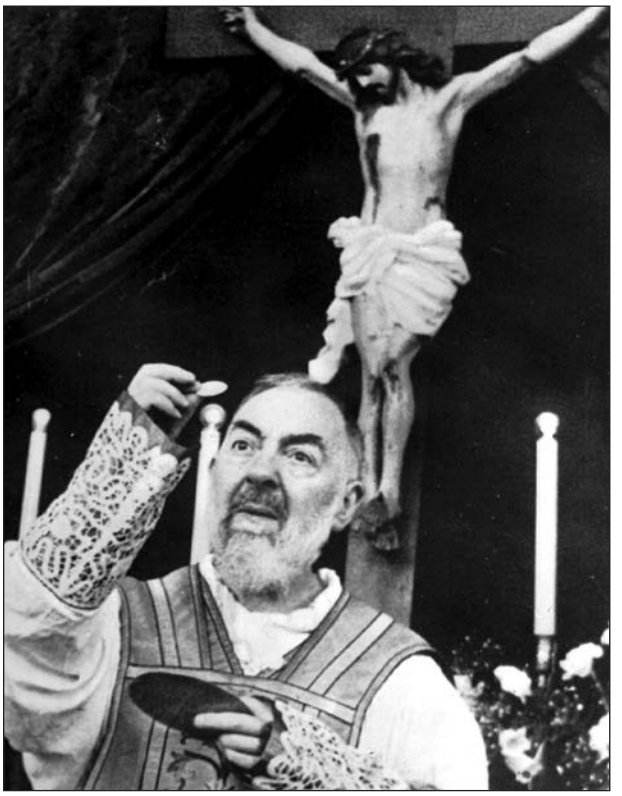
Stroud, Natalie Jomini. 2007. Media effects, selective exposure, and Fahrenheit 9/11. Political Communication, 24 (4): 415–432.

Whipple, Dan. 2008. Expelling all reason. SKEPTICAL INQUIRER May/June, 32(3): 52–53. □

Padre Pio: Wonderworker or Charlatan?

JOE NICKELL

Of the twentieth century's two most famous stigmatics (those who experience the supposedly supernatural wounds of Jesus), both Therese Neumann and Padre Pio were suspected of fraud, but Pio went on to sainthood and was canonized in 2002. In April 2008 his body was exhumed and put on display in a church crypt in San Giovanni Rotondo, Italy, a move that both attracted throngs of the credulous and provoked outrage among some Pio devotees. It also renewed questions about the genuineness of the stigmata and other phenomena associated with Pio.



This undated file photo shows Italian priest Padre Pio da Pietrelcina, the capuchin friar famed for his alleged, mysterious crucifixion wounds. AFP PHOTO/FILES [Photo via Newscom]

A Capuchin Friar

Born Francesco Forgione on May 25, 1887, in the town of Pietrelcina, Pio grew up surrounded by superstitious beliefs and practices. His mother took him soon after birth to a fortune-teller to have his horoscope cast and at the age of two to a witch who attempted to cure an intestinal disorder by holding him upside down and chanting spells. As a boy he was tormented by nighttime "monsters," and he conversed with Jesus, the Virgin Mary, and his guardian angel. He also had other mystical experiences (Ruffin 1982, 21–23, 79) that today are associated with a fantasy-prone personality.[1] He was "frequently ill and emotionally disturbed" and claimed he was often physically attacked by evil spirits (Wilson 1988, 88, 144).

In 1903, he entered The Order of Friars Minor, Capuchin—a conservative Catholic order that traces its origin to St. Francis of Assisi (1182–1226), the first stigmatic. The new initiate was called *Fra* ("Brother") *Pio* ("Pious"), after the sixteenth-century pope, St. Pius V (Ruffin 1982, 35, 39). Pio continued to hear voices and experience visions, and in 1910 he began to experience the stigmata just after being ordained a priest.

As Padre Pio continued to exhibit the phenomenon, he began to attract a cult following. It was said he could look into people's souls and, without them saying a word, know their sins. He could also allegedly experience "bilocation" (the ability to be in two places at the same time), emit an "odor of sanctity," tell the future, and effect miraculous cures (Wilkinson 2008; Rogo 1982, 98–100). Village hucksters sold his credulous disciples alleged Pio relics in the form of swatches of cloth daubed with chicken blood (Ruffin 1982, 153).

The local clergy accused Padre Pio's friary of putting him on display in order to make money. They expressed skepticism about his purported gifts and suggested the stigmata were faked.

The Phenomena

The claims of Padre Pio's mystical abilities are unproven, consisting of anecdotal evidence—a major source being the aptly named *Tales of Padre Pio* (McCaffery 1978). Pio's touted psychic abilities seem no better substantiated than the discredited claims of the typical fortuneteller or medium (e.g., Nickell 2001, 122–127, 197–199). Many of his "bilocations" are analogous to Elvis Presley sightings, while some are—at best—consistent with hallucinations (such as one reported during a migraine attack or others occurring when the experiencer was near sleep or in some other altered state [McCaffery 1978, 24–36]). The reputed "odor of sanctity," said Pio's accusers, "was the result of self-administered *eau-de-cologne*" ("Pio" 2008).

Joe Nickell is CSI's Senior Research Fellow. His numerous books include Looking for a Miracle *and* Adventures in Paranormal Investigation. *His Web site is at www.joenickell.com.*

As to Pio's miraculous healings, they—like other such claims (Nickell 2001, 202–205)—are not based on positive evidence of the miraculous. Instead, the occurrences are merely held to be "medically inexplicable," so claimants are engaging in the logical fallacy of arguing from ignorance (drawing a conclusion based on a lack of knowledge). Faith-healing claims often have alternative explanations, including misdiagnosis, psychosomatic conditions, spontaneous remissions, prior medical treatment, and other effects, including the body's own healing ability. Cases are complicated by poor investigation and even outright hoaxing. One man's claim of instant healing of a leg wound by Padre Pio, for example, was bogus; his doctor attested it "had, in fact, been healed for six months or more" (Ruffin 1982, 159).

But it is Pio's stigmata that have made him famous. Unfortunately, some examining physicians believed his lesions were superficial, but their inspections were made difficult by Pio's acting as if the wounds were exceedingly painful. Also, they were supposedly covered by "thick crusts" of blood. One distinguished pathologist sent by the Holy See noted that beyond the scabs was an absence of "any sign of edema, of penetration, or of redness, even when examined with a good magnifying glass." Another concluded that the side "wound" *had not penetrated the skin at all* (Ruffin 1982, 147–148). Some thought Pio inflicted the wounds with acid or kept them open by continually drenching them in iodine (Ruffin 1982, 149–150; Moore 2007; Wilkinson 2008).

Nevertheless, some of the faithful were so intent on defending Pio that they made incredible claims. One was the insistence that the hand lesions, which skeptics thought were superficial injuries, were through-and-through wounds—"so much so," insisted Pio's devoted family physician, that one could see light through them." Of course, this is nonsense in view of authentic wounds in general and Pio's thickly blood-crusted ones in particular (Ruffin 1982, 146–147).

There were other problems with the "wounds," including their location. Only the gospel of John (19:34) mentions the lance wound in Jesus' side, and John fails to specify which side. St. Francis' was on the right, whereas Padre Pio's was on the left. Also, witnesses described his side wound as in the shape of a cross; in other words, it had a stylized rather than realistic (lance-produced) form (Ruffin 1982, 145, 147).[2] Moreover, his wounds were in the hands rather than the wrists (some anatomists argue that nailed hands could not support the body of a crucified person and would tear away). When asked about this, Pio replied casually, "Oh it would be too much to have them exactly as they were in the case of Christ" (Ruffin 1982, 145, 150). (One is reminded of Therese Neumann, whose "nail wounds" shifted from round to rectangular over time, presumably as she learned the true shape of Roman nails [Nickell 2001, 278].) Moreover, Padre Pio lacked wounds on the forehead (as from a crown of thorns [John 19:2]).

"For the first time in anyone's memory, [Padre Pio] did not attempt to hide his hands at any point in the service. To the amazement of everyone there, there was no trace of any wound."

For years Pio wore fingerless gloves on his hands, perpetually concealing his wounds (Ruffin 1982, 148). His supporters regard this as an act of pious modesty. However, another interpretation is that the concealment was a shrewd strategy that eliminated the need for him to maintain his wounds. Before his death, frail, weary, with "rheumy eyes seemingly fixed on another world," Padre Pio celebrated Mass. According to Ruffin (1982, 305), "For the first time in anyone's memory, he did not attempt to hide his hands at any point in the service. To the amazement of everyone there, there was no trace of any wound." At his death on September 23, 1968, his skin was unblemished.

So, were Padre Pio's phenomena genuine? Many other stigmatics—like Magdalena de la Cruz in 1543—confessed to faking stigmata. Maria de la Visitacion, the "holy nun of Lisbon," was caught painting fake wounds on her hands in 1587. Pope Pius IX himself privately branded as a fraud Palma Maria Matarelli (1825–1888), insisting that "she has befooled a whole crowd of pious and credulous souls." Suspiciously, under surveillance, Therese Neumann (1898–1962) produced actual blood flows only when the phenomenon was "hidden from observation." And as recently as 1984, stigmatic Gigliola Giorgini was convicted of fraud by an Italian court (Wilson 1988, 26–27, 42, 53, 147).

Even a defender of Padre Pio's stigmata, C. Bernard Ruffin (1982, 145), admits, "For every genuine stigmatic, whether holy or hysterical, saintly or satanic, there are at least two whose wounds are self-inflicted." Catholic scholar Herbert Thurston (1952, 100) found no acceptable case after St. Francis of Assisi. Thurston believed the phenomenon was due to suggestion, but Padre Pio himself responded to such theorizers: "Go out to the fields and look very closely at a bull. Concentrate on him with all your might. Do this and see if horns grow on your head!" (qtd. in Ruffin 1982, 150). As for St. Francis, his extraordinary zeal to imitate Jesus may have led him to engage in a pious deception (Nickell 2001, 276–283).

Canonization

Not only was Padre Pio accused of inducing his stigmata with acid, he was also alleged to have misused funds and to have had sex with female parishioners—in the confessional. The founder of the Catholic university hospital in Rome branded Pio

"an ignorant and self-mutilating psychopath who exploited people's credulity" ("Pio" 2008).

The faithful were undeterred, however, and after Pio's death there arose a popular movement to make him a saint. Pope John Paul II—whose papacy sped up the process of canonization and proclaimed more saints than any other in history (Grossman 2002)—heard the entreaties. Pio was beatified in 1999. On June 16, 2002, he was canonized as Saint Pio of Pietrelcina, but not before at least two statues of him wept in anticipation. Unfortunately, the bloody tears on one turned out to have been faked (a drug addict used a syringe to apply trickles of his own blood), and a whitish film on one eye of the other was determined to have been insect secretion ("Crying" 2002).

Interestingly, neither of the two proclaimed miracles of Pio (one used for his beatification, the other for canonization) involved stigmata. Instead, they were healings, assumed miraculous because they were determined to be medically inexplicable. In short, the Church never affirmed Pio's stigmata as miraculous.

Of course, not everyone was happy with the canonization of Pio. Historian Sergio Luzzatto wrote a critical biography of Pio called *The Other Christ*. Luzzatto cited the testimony of a pharmacist recorded in a document in the Vatican's archive. Maria De Viot wrote: "I was an admirer of Padre Pio and I met him for the first time on 31 July 1919." She revealed, "Padre Pio called me to him in complete secrecy and telling me not to tell his fellow brothers, he gave me personally an empty bottle, and asked if I would act as a chauffeur to transport it back from Foggia to San Giovanni Rotondo with four grams of pure carbolic acid" (Moore 2007). But if the acid was for disinfecting syringes, as Pio had alleged to the pharmacist, why the secrecy? And why did Pio need non-diluted acid?

Investigation shows the timing of this reported incident is significant. The previous September, Pio and some of the other friars at San Giovanni Rotondo were administering injections to boys who were ill with influenza. Alcohol not being available, an exhausted doctor left carbolic acid to be used for sterilizing needles and injection sites, while neglecteing to tell the friars it had to be diluted. As a result, Pio and another friar were left with "angry red spots" on their hands. When Pio was subsequently alleged to have exhibited stigmata, the other friar at first thought the wounds were from the carbolic acid. Although Pio allegedly exhibited stigmata on his hands as early as 1910, the "permanent" stigmata appeared, apparently, not long after the carbolic-acid misuse (Ruffin 1982, 69–71, 138–143).

Sergio Luzzatto drew anger for publicizing the pharmacist's testimony. The Catholic Anti-Defamation League accused the historian of "spreading anti-Catholic libels," and the League's president sniffed, "We would like to remind Mr. Luzzatto that according to Catholic doctrine, canonisation carries with it papal infallibility" (Moore 2007).

Exhumation

Forty years after the death of Padre Pio in 1968, his remains were exhumed from their crypt beneath a church in San Giovanni Rotondo. The intention of church officials was to renew reverence and so boost a flagging economy. Padre Pio, explained the *Los Angeles Times*, is "big business" (Wilkinson 2008).

No doubt many anticipated that the saint's body would be found incorrupt. The superstitious believe that the absence of decay in a corpse is miraculous and a sign of sanctity (Cruz 1977). In fact, under favorable conditions even an unembalmed body can become mummified. Dessication may result from interment in a dry tomb or catycomb. Conversely, perpetually wet conditions may cause the body's fat to form a soaplike substance known as "grave wax"; subsequently, the body may take on the leathery effect of mummification (Nickell 2001, 49).

Alas, Pio's body, despite embalment (by injections of formalin), was only in "fair condition." So that it could be displayed, a London wax museum was commissioned to fashion a lifelike silicon mask of Pio, complete with his full beard and bushy eyebrows. The "cosmetically enhanced corpse" went on display April 24, 2008, in a glass-and-marble coffin (where it is to repose until the end of September 2009) "amid weeping devotees and eager souvenir-hawkers" (Wilkinson 2008; "Pio" 2008). For those who wonder: no, there is no visible trace of stigmata.

Acknowledgments

I am grateful to Herb Schapiro, who continues to send me useful news clippings, and Tim Binga, director of CFI Libraries, for his continued research assistance.

Notes

1. For a discussion of fantasy proneness, see Nickell 2001, 84–85, 298–299.

2. The three-inch side wound was seen relatively rarely and, although "most witnesses" said it was cruciform, others described it as being "a clean cut parallel to the ribs" (Ruffin 1982, 147).

References

Cruz, Joan Carroll. 1977. *The Incorruptibles*. Rockford, Illinois: Tan Books and Publishers.

Crying statue not a miracle. 2002. Available online at www.ananova.com; accessed March 12.

Grossman, Cathy Lynn. 2002. John Paul II is history's champion saintmaker. *USA Today*, October 3.

McCaffery, John. 1978. *Tales of Padre Pio: The Friar of San Giovanni*. Kansas City, Kansas: Andrews and McMeel.

Moore, Malcolm. 2007. Italy's Padre Pio "faked his own stigmata with acid." Available online at www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/10/2...; accessed October 24, 2007.

Nickell, Joe. 1993. *Looking for a Miracle*. Buffalo, N.Y.: Prometheus.

———. 2001. *Real-Life X-Files: Investigating the Paranormal*. Lexington, Ky.: University Press of Kentucky.

Padre Pio da Pietrelcina. 2008. Available online at www.vatican.va/news_services/liturgy/saints/ns_lit_doc_20020616_padre-pio_en.html; accessed April 28, 2008.

———. 2008. Available online at www.en.wikipedia.org/wiki/Pio_of_Pietrelcina; accessed April 28, 2008.

Rogo, D. Scott. 1982. *Miracles: A Parascientific Inquiry Into Wondrous Phenomena*. New York: Dial Press.

Ruffin, C. Bernard. 1982. *Padre Pio: The True Story*. Huntington, Indiana: Our Sunday Visitor.

Wilkinson, Tracy. 2008. Padre Pio's body attracts thousands. *Buffalo News*, April 25 (reprinted from the *Los Angeles Times*).

Wilson, Ian. 1988. *The Bleeding Mind: An Investigation into the Mysterious Phenomenon of Stigmata*. London: Weidenfeld and Nicolson. □

INVESTIGATIVE

Lighthouse Specters

Remote sentinels on rocky shores, lighthouses have been called "America's castles" (Hermanson n.d.). Certainly, they are places of scenic beauty, romance, and legend. From the late eighteenth century until the last lighthouse tower was automated in the 1960s, lighthouse keepers and their families worked around the clock at the lonely job of maintaining light stations—keeping the beacons lit and, when necessary, the fog signals sounding. If many popular writers are to be believed, the spirits of some keepers, shipwreck victims, and others still maintain their lonely vigils (Elizabeth 1999, vii; Thompson 1998, 7).

Investigating On Site

Over the years I have visited and investigated many of these "haunted" sites. I climbed the 219 steps of the 165-foot lighthouse at St. Augustine, Florida. As "assistant keepers," my wife and I stayed a few days in the remote Big Bay Point Lighthouse on Michigan's upper Peninsula perched on a cliff overlooking Lake Superior. We did the same at Thirty Mile Point Light on Lake Ontario (so named because it is thirty miles east of the mouth of the Niagara River). A bonus of the latter was access to a few years of entries recorded in its guest books—or maybe I should say *ghost* books given the various mentions, pro and con, of spooky phenomena.

In addition, I have visited other reputedly haunted sites, such as Lake Michigan's Seul Choix Point Lighthouse (figure 1) (escorted up to the lantern room by Coast Guard maintenance men); the "French Castle" (officers quarters) at Old Fort Niagara, which had a navigational light placed atop it in 1780 (Grant and Jones 2002, 112–113); and the old and new lighthouses at Presque Isle, Michigan, on Lake Huron; as well as other lighthouses and proximate coastal areas.

At some of the sites—such as Peggy's Cove, Nova Scotia, and Cape Hattaras and Ocracoke, North Carolina—ghosts are not reported in the lighthouses per se but rather are experienced as apparitions seen along the nearby seashore.

Apparitions

Among apparitional experiences—which involve the supposed sensing of a dead person (by sound, scent, or even touch)—a minority are visual sightings (Guiley 2000, 16). For example, as with supposedly haunted inns, some historic lighthouses and keepers' cottages have overnight guests who may awaken to see a spectral figure. Such was the case with intrepid lighthouse photographers Bob and Sandra Shanklin, who were able to spend a night at Plymouth Bay, Massachusetts. According to Bob: "I saw a woman's face hovering about fifteen or sixteen inches above Sandra's face. She had a blue-green, iridescent appearance, and she was wearing an old-timey garment that buttoned tight around her long neck." When he looked away for a moment, she vanished. "I hate that I didn't wake up Sandra, so she could see her, too," he added.

Given the woman's quaint dress, the Shanklins thought she might have been the ghost of Hannah Thomas. Hannah had carried on the duties of her husband John while he served in the Revolutionary War and for a period following, when he failed to return and was presumed dead. In 1790, officials made her the first designated female lighthouse keeper in America (Elizabeth and Roberts 1999, 15–21).

The report of another spectral sighting comes from Big Bay Point Lighthouse. Several years ago, a lady saw "a man in a beard and hat" standing at the foot of her bed. The credulous believe he was the "restless spirit" of former lighthouse keeper William Prior who—despondent over the death of his son—hanged himself in the woods in 1901 (Stonehouse 1997, 32).

Actually, however, neurologists and psychologists attribute such "ghost" sightings to a type of dream that occurs in the twilight between sleep and wakefulness. Called "waking dreams" (known in earlier times as "night terrors"), they are quite common and are very realistic

Joe Nickell, PhD, is the author of numerous books, including Entities *and* Adventures in Paranormal Investigation. *His Web site is at www.joenickell.com.*

to those who experience them (Nickell 1995, 41, 117).

But what about apparitions that are seen during normal waking activity? My own investigative experience, as well as other research data, demonstrates that apparitions are most likely to be perceived during daydreams or other altered states of consciousness. Many occur, for example, while the experiencer is in a relaxed state or concentrating on some activity like reading or performing routine work. Under such conditions, particularly in the case of imaginative persons, a mental image might emerge from the subconscious and be briefly superimposed on the visual scene, yielding a "sighting" (Nickell 2001, 291–292). Researcher G.N.M. Tyrrell (1973) noted that apparitions of people appear fully clothed and are often accompanied by objects, just as they are in dreams, because the clothes and objects are required by the apparitional drama.

Such mental images may be the basis for sightings of figures like the "Lady in Blue" who has allegedly been seen over the years near the lighthouse at Peggy's Cove, Nova Scotia ("Peggy's Cove" 2008b); the "girl wearing a red dress" in the keepers' dwelling at St. Augustine Lighthouse (Elizabeth and Roberts 1999, 41–45); the apparition of a shipwrecked "old salt" at Ram Island Light in Boothbay Harbor, Maine (Thompson 1998, 71); or the figure of Aaron Burr's daughter, Theodosia, on the beach near Cape Hattaras Lighthouse (or is it the lighthouse on Ocracoke Island?) (Elizabeth and Roberts 1999, 65–73; Elizabeth and Roberts 2004, 9, 11; Zepke 1999, 78–81). In any event, all of these sightings are accompanied by multiple conflicting stories—what folklorists call *variants*, evidence of the transmission process that produces folklore (Brunvand 1978, 7). Dissemination of the tales prompts more sightings from imaginative individuals, giving the supposed ghosts something of a life of their own.

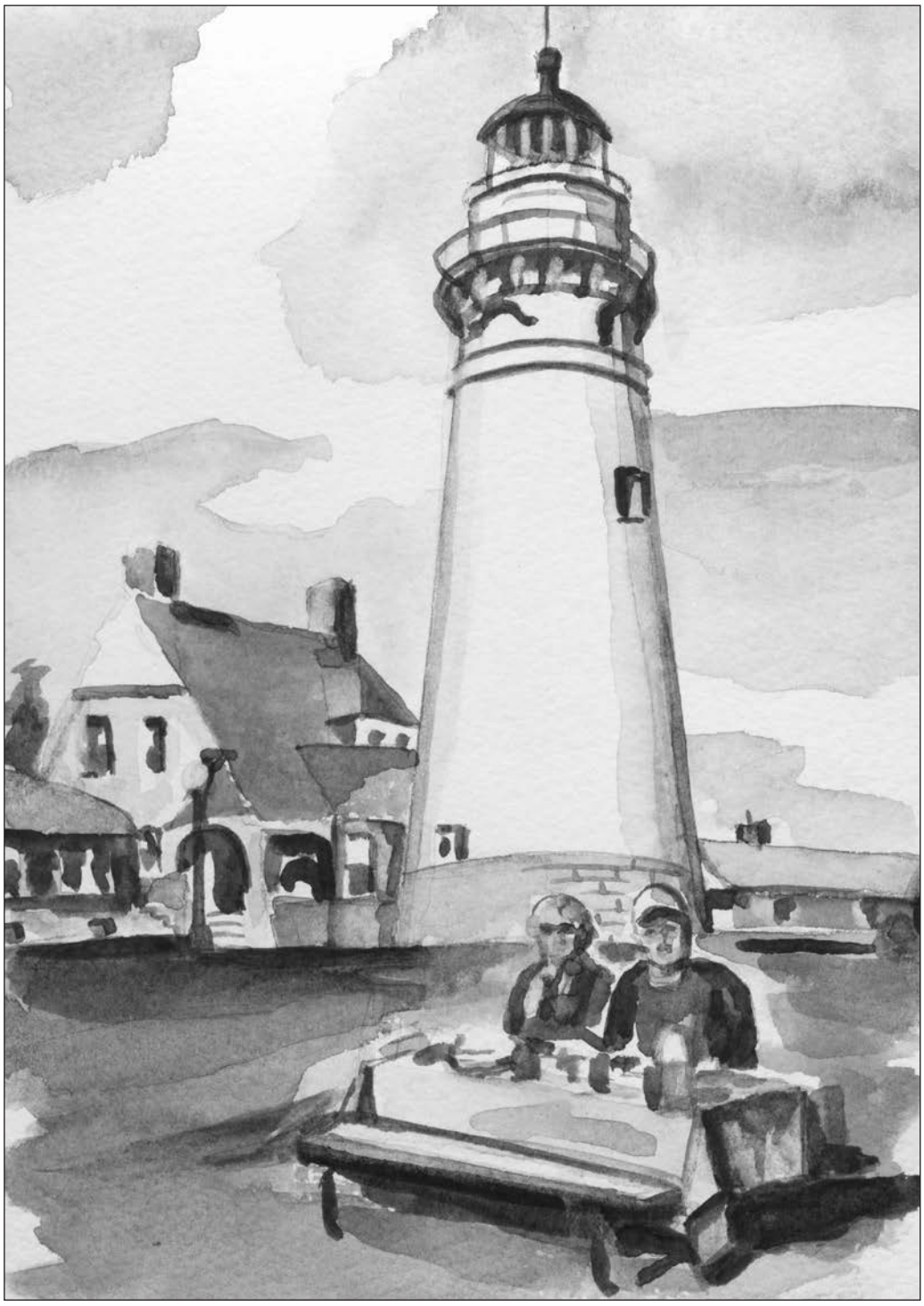


Figure 1. The author and his wife (Diana G. Harris) picnic at "haunted" Seul Choix Point Lighthouse on Lake Michigan (watercolor sketch by Joe Nickell).

Other Phenomena

In addition to visual apparitions, other touted phenomena at lighthouses (and their environs) are similar to those reported at other alleged spirit-dwelling sites. They include the following:

Ghostly footsteps. The sounds of footfalls are frequently reported in haunted lighthouses or keepers' homes. This is despite the irony of ghosts being such ethereal entities that they pass through walls yet allegedly depressing floorboards as they walk.

My wife Diana and I failed to hear the footsteps that have been reported in

the lightkeeper's dwelling at Seul Choix (pronounced Sis-shwa) on Lake Michigan (again, see Figure 1). Supposedly, they were heard once by a carpenter while he was nailing subflooring at the base of the staircase. Because the footsteps stopped whenever he ceased nailing, he concluded that the sounds were merely echoes of his hammering—that is, until he finally put down his hammer and still heard "heavy footsteps" upstairs. Reportedly he "packed up his tools and left, 'vowing never to return by himself'" (Elizabeth and Roberts 1999, 85–86).

The precise truth of this tale is anybody's guess, but there are a number of likely causes for audible footstep-like noises in a "haunted" place. Among them are simple creaking sounds caused by an old building's settling, from woodwork that yields knocking and popping sounds as the result of temperature changes, or from myriad other causes (Nickell 1995, 47–48; Christopher 1970, 169, 171). At Thirty Mile Point Light on Lake Ontario, one overnight guest commented in the log book, "People write of ghosts. We haven't heard any yet, just a lot of noises from the pipes when the heat turns on!" (Thirty 2001–2007).

Still another force seems a likely culprit for the "footsteps" heard in the tower of Battery Point Lighthouse near Crescent City, California. They invariably occurred "during stormy weather," indicating that the sounds were probably caused by the wind. Although previous keepers had experienced many such "ghostly" happenings at Battery Point, a subsequent couple did not. The wife attributed her lack of haunting incidents to the fact that she absolutely did not believe in ghosts (Elizabeth and Roberts 1999, 50–63).

Moans and shrieks. Eerie sounds attributed to mournful or distraught spirits are commonly reported—as if vocalizations are possible without a larynx. In one instance, such sounds were found to come from the wind blowing through an open sewer pipe. Comments William O. Thompson in his *Lighthouse Legends and Hauntings* (1998, 33), "Perhaps this is how some of our ghost stories get started. Every lighthouse is exposed to strange sounds and an active imagination can be very creative."

Consider New Presque Isle Light Station on Lake Huron (north of Alpena, Michigan). According to ghost mongers, the site is haunted by the unrequited spirit of a former keeper's wife. She went insane (according to one version of the tale) due to the stark isolation and numbing boredom of lighthouse life or (says another version) due to being locked in the tower whenever her husband visited his mistress in town. In any event, the woman supposedly died at the site, and "people have reported hearing her screaming" near the tower. In a rare moment of skepticism, however, the writers concede, "perhaps it's just the fierce Lake Huron wind screaming around the tower" (Elizabeth and Roberts 1999, 12).

There are a number of likely causes for audible footstep-like noises in a "haunted" place. Among them are simple creaking sounds caused by an old building's settling, from woodwork that yields knocking and popping sounds as the result of temperature changes, or from myriad other causes.

Thompson (1998, 73) observes that lighthouses are "natural places" for people to have "ghostly experiences," and he mentions the effects of wind whistling through cracks in the structures as among the causes of unaccountable noises. As well, analogous to what happens to woodwork, he notes, old steel "creeps and moans" due to expansion by sunlight and contraction by cold, night air.

Again, at Thirty Mile Point Light, guest-book entries report various ghostly sounds, while others give skeptical interpretations, like this one: "Ghosts? Well we heard all kinds of strange noises but it was very windy." Another person wrote, "The very windy nights added to the 'ghostly sounds' of the building" (Thirty 2001–2007).

Phantom smells. Among other "ghostly" phenomena at lighthouses are strange smells. For example, from Old Presque Isle Lighthouse, now a museum, comes a touching story by Lorraine Parris, a worker in the gift shop. Previously, she and her husband George were caretakers at the site for fourteen years, until he died of a heart attack at the beginning of 1992. According to *Lighthouse Ghosts* (Elizabeth and Roberts 1999, 8), "Sometimes she feels George in the dwelling with her." Moreover, "She recalls waking up some mornings smelling eggs and sausage cooking—a familiar aroma since that's what George used to cook for her for breakfast every morning." But surely, rather than a ghostly visitation the experience is instead the poignant effect of a memory arising lovingly from the subconscious.

At other sites, such as St. Augustine Lighthouse, the motif of lingering cigar smoke appears in circulating ghost tales (Elizabeth and Roberts 1999, 40–49). Again, combined with the previously mentioned footsteps in the keeper's house at Seul Choix Point Lighthouse, the "strong smell of cigars" convinces some "that a lighthouse keeper is still at work" there ("Seul Choix" 2005), although others attribute the phenomena to a ship's captain named James Townshend who died in the dwelling in 1910 (Elizabeth and Roberts 1999, 82–89; Smith 2003, 124).

However, not only is the identity of the phantom questioned, but so is the nature of the smoke itself. In her *Ghost Stories of the Sea*, Barbara Smith (2003, 124) attributes the phenomenon to Captain Townshend but refers to it as "the smell of the man's ever-present *cigarettes*," again stating that "the smoky smell from the man's *cigarettes* can still occasionally be detected" (emphasis added). Here, I think, is an important clue to what is really happening. The smell of actual smoke—whether from

area chimneys or cigarettes or whatever other source—is interpreted as cigar smoke because that is what has been suggested and is therefore expected.

Proof of this is evident from an incident at Seul Choix reported in *Haunted Lakes II* (Stonehouse 2000, 4). Two visitors, smelling what they thought was burning wiring, ran to tell the tour guide they thought the house was on fire. If "cigar smoke" can be mistaken for burning wiring, some other burning material could in turn be mistaken for it.

Pranks. Mischief attributed to ghosts at various sites may have a far simpler explanation: the pranksters may not be dead after all!

Consider, for instance, the shenanigans attributed to the aforementioned spectral cigar smoker at Seul Choix. Supposedly the ghost of Captain Townshend liked to "play pranks." A docent claims that

> . . . he sometimes turns over the silverware on the table (Captain Townshend used to hold his fork upside down when he ate). Once in a while the old captain shuts the Bible that's on display in the dwelling, and he seems to take great pleasure in turning the hat around on the mannequin that's dressed in an official keeper's uniform. Occasionally, Captain Townshend even puts a cigar or two in the pocket of the keeper's coat! (Elizabeth and Roberts 1999, 87)

No, the cigars were not materialized from the Great Beyond. They had been set out "in strategic places in the house," once by a group doing a magazine story and again by a couple of Boy Scouts and their Scoutmaster (Stonehouse 2000, 10). The temptation each time for someone to play ghost must have been irresistible. Over the years I have encountered many such pranksters (Nickell 2001), even catching a few red-handed myself (Nickell 2008).

Phantom Light

The Old Presque Isle Light, first lit in 1840, was extinguished when the "New" lighthouse was built about a mile away in 1870. Yet according to some, the spirit of an old keeper still maintains a "phantom light" in the tower, which has been witnessed on numerous occasions.

Nevertheless, there are reasons to believe that whatever is the source of the mystery light, it has nothing to do with spirits. It is crucial to note that it is never seen by anyone who is actually inside the lantern room. And it is described as lacking the intensity and whiteness of a true lighthouse beam. Indeed, it is not a beam at all (see the photo in Grant and Jones 2002, 139), and certainly not a rotating beam, but tends to be only a "yellow glow" (Elizabeth and Roberts 1999, 6).

Indeed, I think we can take a clue from similar reports; the motif of a ghost light is common in spooklore. The late magician and psychic investigator Milbourne Christopher (1970, 172–173) told of a deserted house wherein persons at a distance from the structure could see a lantern, supposedly carried by a specter, moving from room to room. It always went from right to left. However, an investigator discovered that the light was not an interior one at all but rather the reflection of headlights on the window's glass each time a car approached the house. Other spirit lights in windows often turn out to be reflections from the moon or other light sources, an effect I have witnessed on more than one occasion (Nickell 1995, 50–51).

Now, we are told that attempts have been made to stop Presque Isle's phantom light from shining. "We've had the glass covered inside and the lens covered, but the light was still there," says Lorraine Parris. "It seems to shine right through. There's just no way to stop it" (qtd. in Grant and Jones 2002, 139). Reportedly, coast guardsmen remained baffled as the light persisted even when nearby lights were extinguished for a while one night (Elizabeth and Roberts 199, 6).

But all such actions are obviously predicated on the assumption that reflection is the logical culprit. Indeed the fact that the light still shone after the glass was covered on the *inside* is telling: it seems a safe bet that it would not continue if the glass were covered on the *outside*. Moreover, the reflection hypothesis is given weight by the light's dependence on viewing conditions. It is reportedly best seen from a certain spot on the pier. Also, if the viewer is traveling along the road near the marina or in a boat on the lake, the "spirit light" will "blink on and off," thus "making it appear to be the beam from a rotating beacon"—while it is, of course, no such thing. That effect may well be due to a light reflecting first from one flat pane of glass then another as the viewer's line of sight changes. And so it appears that here, as with other lighthouses, ghosts are really only illusions of our sometimes haunted minds.

Acknowledgments

Thanks to Pat Beauchamp and CFI Libraries director Tim Binga for their assistance with this article.

References

Brunvand, Jan Harold. 1978. *The Study of American Folklore: An Introduction*, 2nd ed. New York: W.W. Norton.

Christopher, Milbourne. 1970. *ESP, Seers and Psychics*. New York: Thomas Y. Crowell Co.

Elizabeth, Norma and Bruce Roberts. 1999. *Lighthouse Ghosts: 13 Bona Fide Apparitions Standing Watch Over America's Shores*. N.p. Crane Hill Publishers.

———. 2004. *Lighthouse Ghosts and Carolina Coastal Legends*. Morehead City, N.C.: Lighthouse Publications.

Grant, John and Ray Jones. 2002. *Legendary Lighthouses*, vol. II. Guilford, Conn.: Globe Pequot Press.

Guiley, Rosemary Ellen. 2000. *The Encyclopedia of Ghosts and Spirits*. New York: Checkmark Books.

Hermanson, Don. N.d. *True Lighthouse Hauntings*, video.

Nickell, Joe. 1995. *Entities: Angels, Spirits, Demons, and Other Alien Beings*. Amherst, N.Y.: Prometheus Books.

———. 2001. Phantoms, Frauds, or Fantasies? In James Houran and Rense Lange *Hauntings and Poltergeists: Multidisciplinary Perspectives*. Jefferson, N.C.: McFarland and Co., 214–223.

———. 2008. Catching ghosts. *Skeptical Briefs*, 18:2 (June), 4–6.

"Peggy's Cove, Lady In Blue." 2008a. Creepy Canada, Season 2—Episode 3. Available online at www.creepy.tv/season2_e3.html; accessed February 18, 2008.

"Peggy's Cove, Nova Scotia, Lady In Blue." 2008b. Ghost Study message board. Available online at www.paranormalsoup.com/forums/index.php?showtopic=21962&mode=threaded; accessed February 18, 2008.

Seul Choix Point Lighthouse. 2005. Available online at www.exploringthenorth.com/seulchoix/seul.html; accessed October 4, 2005.

Smith, Barbara. 2003. *Ghost Stories of the Sea*. Edmonton, Alberta: Ghost House Books.

Stonehouse, Frederick. 1997. *Haunted Lakes: Great Lakes Ghost Stories, Superstitions and Sea Serpents*. Duluth, Minnesota: Lake Superior Port Cities.

———. 2000. *Haunted Lakes II: More Great Ghost Stories*. Duluth Minnesota: Lake Superior Port Cities.

Thirty Mile Point Light. 2001–2007. Guest books 1–3, various entries; copies in author's files.

Thompson, William O. 1998. *Lighthouse Legends and Hauntings*. Kennebunk, Maine: 'Scapes Me.

The Brain on Justice

Justice, fairness, and the efficient distribution of resources do not seem at first the sort of topics that should interest a neurobiologist, at least not professionally. Philosophers have long discussed issues of justice and fairness, while economists compare strategies of distribution based on their expected efficiency in the markets. But science, philosophy, and economics are converging to re-evaluate how we think and act as social beings (see also my Thinking About Science column, SI, November/December 2006).

The latest entry in this fascinating interdisciplinary field of inquiry is provided by a paper published in *Science* on May 23, 2008, by Ming Hsu, Cédric Anen, and Steven Quartz of the University of Illinois and the California Institute of Technology. Hsu and collaborators set out to identify the regions of the brain that are involved in the logically distinct tasks of assessing fairness and efficiency in the distribution of resources. The problem arises under common circumstances and presents us with the sort of choice that we have to make at several levels, from decisions [redacted]

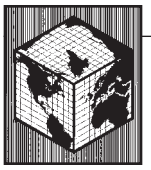
Massimo Pigliucci is professor of evolutionary biology and philosophy at Stony Brook University in New York, a fellow of the American Association for the Advancement of Science, and author of Denying Evolution: Creationism, Scientism and the Nature of Science. *His essays can be found at www.rationallyspeaking.org.*

vote during elections or allocate money to charity. For instance, to pick an example from the recently concluded Democratic primaries for president: is it better to provide health insurance to a large number of people (but not the entire population) at relatively high levels of coverage or to insure everyone, but at lower levels?

Philosophers, such as John Stuart Mill, who subscribe to a utilitarian ethics would argue that one needs to maximize the good of the majority—but not necessarily the totality—of people. Those who subscribe to a duty-bound ethics (a so-called deontological system), like Immanuel Kant, would instead push for more fairness even at the cost of a suboptimal allocation to the majority of the population. Moreover, philosophers have disagreed on how we make this sort of decision, with rationalists like Plato and Kant arguing for the overriding role of reason countered by David Hume (and even, surprisingly, Adam Smith, the founder of modern economics) concluding that we ought to leave these decisions to our moral instincts, i.e., to

THE BRAIN ON JUSTICE

Continued on page 49



Hunting for Spooklights

The hot, still night was illuminated by a full moon. The two shadowy figures moving along the empty road wondered if this would interfere with their mission.

"Are you sure you took everything?" asked the slender one.

"Of course!" said the shorter one, who was carrying a backpack. "I checked the inventory. I even took the infrared goggles and a telescopic steel rod."

"Really?"

"Well . . . as a form of self-defense. You never know."

The two reached a tall, black gate.

"It's locked."

"Hold this," said the shorter one, handing the backpack to his colleague. After searching it, he took out a large ring with a dozen keys attached.

"Here they are! They assured me that with these there would be no problems."

"We'll see. . . ."

One at a time, the short fellow inserted the keys in the keyhole. But not one worked.

"Damn! I knew it. We should have checked first that it worked."

The road was empty. Only one car had passed since Slender and Shorty stopped by the gate, but it did not slow down. The dark shadows hid them from the light.

"All right, if that's the way it has to be. . . ."

Slender shined a pocket light into the keyhole. "It's an old Wally model, there should be no problem."

Shorty took a leather case out of his pocket and opened it. There were a dozen different lockpicks. One was chosen, and the operation started. "It should be no problem," puffed Shorty, who was crouched on his legs while trying to pick the lock, sweat dripping from his face. "Yeah, it's easy when you just hold the light and someone else has to do the dirty job."

"Cut the chatter. Let's move along."

After a few more attempts there was a reassuring "click." The door was open.

"Quick!" snapped Slender. "Stand up."

"What . . . ?"

"I said quick, get inside!" Slender pushed his mate in the dark hallway and closed the gate. "Don't say a word."

They both hid behind a wall, holding their breath. A police car passed by without stopping.

"That was close!" sighed Slender.

Shorty protested. "Close for what? You make it seem like we are two burglars here!"

Slender smiled. "Yeah, and it's more fun, isn't it?"

"We are here on a scientific mission," continued Shorty. "We are not on a secret hunt to rob lost treasures or something like that."

Slender turned on his pocket light and did not reply. They were in a dark corridor, but down the hall a door that led to the field outside could clearly be seen. It was open when they reached it.

When they stepped outside, the pocket light was no longer needed. The moon was quite bright, but the field, full of a thousand flickering flames, was more luminous. Quite an unexpected view—surreal but almost romantic. Slender regretted he was there with Shorty and not with his girlfriend.

However, it was indisputable: a cemetery at midnight was a sight not to be missed.

Luminous Fungis and Earth Lights

The two mysterious figures in the story above are my friend and colleague Luigi Garlaschelli and myself. Actually, Luigi is not that short, but I needed an easy descriptor for him. And since he is just a little shorter than I am . . . my apologies, Gigi!

The night visits at the Major Cemetery in Pavia, Italy, took place some time ago when we decided it was time to investigate the "will o' the wisp" phenomenon. Of course, we obtained official permission from the county administration—"scientific purposes" was the reason we gave for our requested visit. We were quite fascinated by this rare luminous phenomenon, a source of all kinds of supernatural tales.

Also known as *ignis fatuus*, Latin for temporary fire, will o' the wisps are in fact said to be ghostly lights, usually seen around graveyards and marshes at night. They look like faint flames or a flickering, glowing fog, usually green, that sometimes appears to recede if approached. Folklorists have collected all kinds of legends related to these mysterious lights, including the fact that they could be some form of spirit lights or have a paranormal origin. Science, however, has precious few facts to offer.

Some have proposed that Armillaria, a parasitic kind of fungi known also as "honey fungus," could be responsible

Massimo Polidoro is an investigator of the paranormal, author, lecturer, and co-founder and head of CICAP, the Italian skeptics group. His Web site is www.massimopolidoro.com.

Luigi Garlaschelli at the cemetery in Pavia holding his "Spook-O-Meter"... or, more accurately, a phosphine detector with flasks ready to keep a will o' the wisp, in case of capture.

for some of the apparitions. Some species of Armillaria are bioluminescent and may have been mistaken for will o' the wisps.

According to another theory, the wisps are nothing more than barn owls with luminescent plumage. Hence, the possibility of them floating around reacting to other lights could explain their strange behavior.

In the 1970s, John Derr and Michael Persinger of the Laurentian University in Sudbury, Ontario, Canada, put forth a theory that these lights may be generated piezoelectrically under a tectonic strain.

The theory suggests that the strains that move faults also cause heat in the rocks, vaporizing the water in them. Rocks and soils containing piezoelectric elements such as quartz (or silicon) may also produce electricity, which is channeled up through soils via a column of vaporized water until it reaches the surface, somehow displaying itself in the form of earth lights. If correct, this could explain why such lights can behave in an electrical and erratic—or even apparently intelligent—manner.

Persinger thinks that his theory can be used to predict the manifestation of earthquakes and, along the way, explain many UFO sightings. "When the specific equations between UFO reports (the contemporary label for luminous events) and earthquakes in the central U.S.A. between 1950 and 1980 were applied to the 19th century (earthquakes were recorded then), there were predictable peaks in the numbers of luminous events for specific years," says Persinger.

"Although there were no reports of 'UFOs' in the historical newspapers, there were reports of 'odd air ships' and 'phantom balloons.' The massive 'flap' of 1897, through several tens of states in the southeastern U.S.A., was followed by one of the largest earthquakes in the region."

As interesting as this theory sounds, and as interesting as it would be to discover whether UFO "flaps" of the past century have been followed by major earthquakes or not, we wanted to test a different kind of will o' the wisp. The kind that is said to appear in the presence of freshly buried bodies.

Decaying Bodies

One of the most popular scientific explanations for ghost lights is that the oxidation of hydrogen phosphide and methane gas produced by the decay of organic material may cause glowing lights to appear in the air. And this phenomenon is said to occur more easily in the proximity of "fresh" burials.

Thus, we positioned ourselves, with video cameras rolling, in an area of the cemetery where burials had taken place that same day and a few days before. The idea was to document on film the formation of a will o' the wisp.

Luigi had even built an aspiring pump that would allow him to "suck" the wisp inside a hermetically sealed container in order to later test its chemical com-

position in the lab. In fact, Luigi has now been able to replicate the lights in his laboratory at the Department of Chemistry in Pavia with the help of his colleague Paolo Boschetti.

At first, the idea was to test the "cool fire" effect. Luigi explains it this way: "According to one hypothesis, the will o' the wisp is a sort of cold flame, inconsistent with a normal combustion of methane, as reliable eyewitnesses have reported. 'Cool flames' can indeed be generated if vapors of suitable organic compounds (such as ethyl ether) come in contact with a hot surface kept at temperatures around 200–300°C [392–572°F]. These luminescent pre-combustion haloes are sufficiently cool that a hand or a piece of paper can be put in them without being burned."

The main objection to this interesting hypothesis is that the necessary vapors are not known components of marsh gases, and the presence of surfaces at such high temperatures is difficult to find in nature.

"It is often stated that the phenomenon originates from the spontaneous combustion of gases generated underground by anaerobic fermentation processes," continues Luigi. "These gases consist mainly of methane and carbon dioxide. Small amounts of phosphine (PH_3) and diphosphine (P_2H_4) [self-igniting on contact with the air] would act as a 'chemical match' for the combustible methane.

"Although this hypothesis is one century old, the presence of PH_3 in marsh gases has only recently been demonstrated. If the will o' the wisp indeed is a hot flame, this conjecture might be correct." If, on the contrary, a will o' the wisp is a cool "flame," then the cold chemiluminescence of some compound naturally occurring in marsh gases appears to be a more appealing explanation.

Luigi reconsidered a century-old experiment conducted by German chemists in which phosphine, oxygen, and an inert gas were fed through three small nozzles at the base of a vertical glass tube. By carefully adjusting the flow of the inlets, a faint flickering luminescence could be seen in the dark near the top of the tube due to the chemiluminescence of phosphine.

Luigi built the necessary equipment with a 500 mL flat-bottomed flask, in which he put some solid phosphorous acid. The flask was stoppered by a silicone septum through which a mixture of air and nitrogen was stored on water within a gas tank and fed by a needle. A second needle in the septum provided for the necessary outlet. The flask was flushed with nitrogen and put on a hot plate that was heated to 200°C (392°F).

"It works!" shouted Luigi, probably feeling a little like Dr. Frankenstein.

The decomposition of phosphorous acid generated phosphine, and a fog formed in the flask. When the air and nitrogen stream was fed into the phosphine vapors, a faint, pale-greenish light was clearly visible in the darkness.

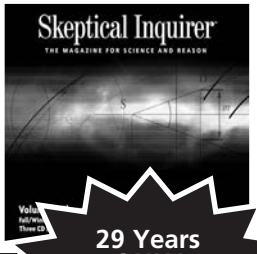
The success in the lab, however, was not matched by success in the field. We spent the entire night at the cemetery, but nothing happened except buzzing and biting mosquitoes. After that there have been repeated visits to cemeteries, graveyards, marshes, and the like, and Luigi has started to carry with him a very sensitive phosphine detector—a portable Draeger Xam-7000—but so far with no luck.

Being able to reproduce spooklights in a lab is one thing. But to see it up close with your own eyes in a cemetery at night is quite another. Hopes are still high, however. There never is a shortage of fresh burials, and hunting season for will o' the wisps is always open. □

Skeptical Inquirer™

DVD or CD-ROM Series 1

Volumes 1 through 29 • (Fall/Winter 1976 – November/December 2005)



29 Years ONLY $150.00

As the official publication of the Committee for Skeptical Inquiry, *Skeptical Inquirer* magazine has provided critical, science-based examinations of a wide variety of topics, from alternative medicine to zombies. This DVD or CD-ROM spans twenty-nine years of the magazine, from its origins as a bi-annual skeptics magazine (first called *The Zetetic*) to its modern incarnation as The Magazine for Science and Reason.

To order call toll-free

1-800-634-1610

Have your credit-card information available.

Alien Peeping Tom—Film at Eleven

The world was startled on May 28 when a Denver man claimed he was going to show a video of a "living, breathing alien" at a news conference in two days, as reported in the *Rocky Moun-tain News* (http://tinyurl.com/5jf6xb). Jeff Peckman was showing the video to build interest in his ballot proposal for an "Extraterrestrial Affairs Commission" for Denver. Exactly why Denver needs an "Extraterrestrial Affairs Commission" while Chicago and Atlanta have gotten along fine without one is unclear; one suspects that if Peckman lived in Dubuque or Sheboygan, he would attempt to set up his spaced-out Commission there. Exactly what the function and duties of such a Commission would be, especially in the absence of any extraterrestrials with whom to mediate, is also unclear. The press, says Peckman, have to turn off their cameras when the video is shown. "No one will be allowed to film the segment with the extraterrestrial because there is an agreement in place limiting that kind of exposure during negotiations for the documentary," he said.

The "documentary" he refers to is one being produced by longtime UFOlogist Stan Romanek. On his Web site www.stanromanek.com/he claims "The Stan Romanek case is the most scientifically documented human/extraterrestrial encounter in the world. There have been well over 100 individually unique experiences that Stan has encountered since December 2000 that remain unexplainable." A man of many talents, Romanek notes that "Being abducted is only one of many experiences," lest you think that he just sits and waits passively for his extraterrestrial pals. "There have been hundreds of witnesses for dozens of events that defy our current understanding of reality. Witnesses, photographs, videotapes, physical evidence, police reports and scientific analysis have confirmed the validity of these experiences beyond reasonable doubt." Exactly where this "evidence" can be found is not stated; presumably we'll just have to wait for the documentary. "Scientists from top universities have been analyzing various aspects of this case for several years with amazing results, expected to be presented to the public and scientific community in the near future." Since none of these alleged "scientists" are named, or their universities, you can draw your own conclusions.

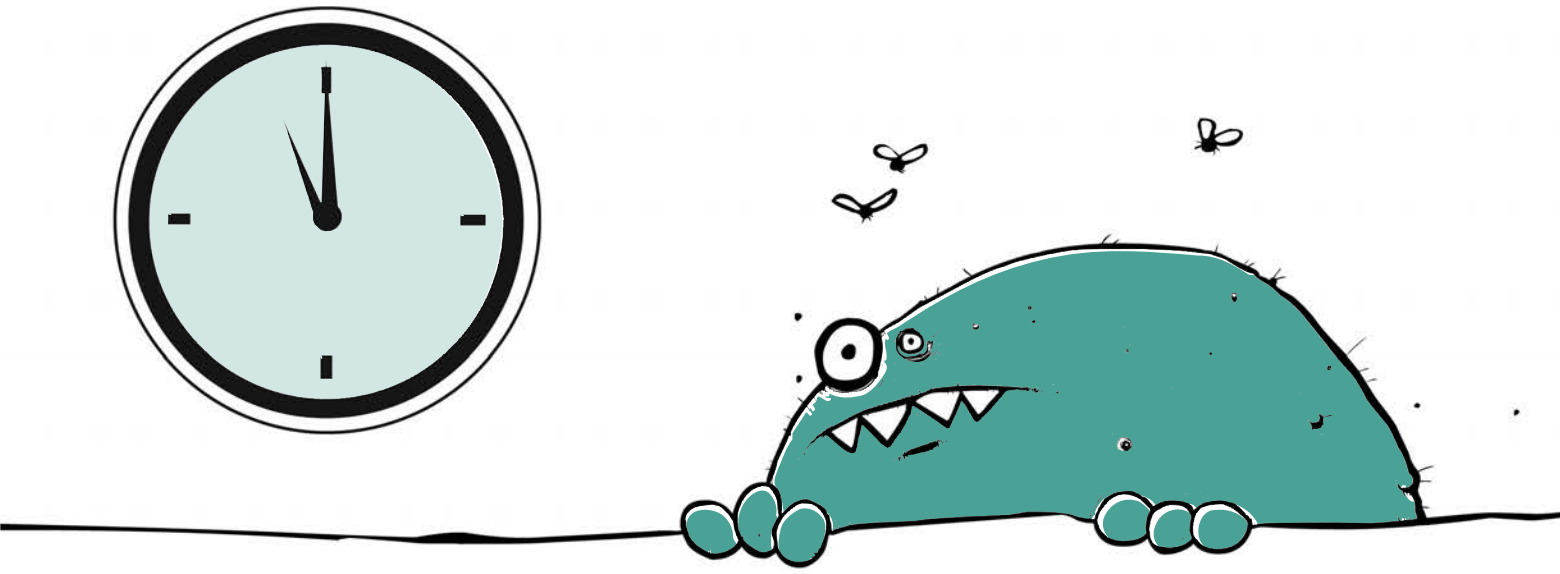
Romanek's story concerning the video is this: in 2003 he was living in Nebraska and was allegedly troubled by a Peeping Tom he believed was spying on his teenage daughters. So he set up a video camera pointing out the window, said to be eight feet off the ground, in hopes of capturing an image of whoever might be doing this. When he played back the video, he found what he had captured was not some neighborhood pervert but instead E.T. Somehow Romanek managed to keep the entire amazing story out of the news for five years, until Peckman's surprise announcement.

Actually, Romanek was not the first to claim that extraterrestrials were peeping into windows. As reported in this column in the Fall of 1978 (yes, it *has* been around that long), the late, great UFO abductee Betty Hill claimed that "window-peeping flying saucers sometimes fly from house to house late at night in New England, shine lights in the windows, and then move on when the occupants wake up and turn on the lights." A year later, we reported on the UFO research of John Brent Musgrave of Edmonton, Alberta, who received a $6,000 grant from an agency of the Canadian government to support his research into UFO sightings in Canada. This enabled him to compile a "Catalogue of Occupants and Critters," which he found fell into eight types. Among the types are "peeping toms and molesters." Nonetheless, window-peeping aliens have not been reported *recently*, at least not until Romanek's video.

The claims made on May 28 had the desired effect of getting the attention of the major media, both U.S. and worldwide, and Peckman gave many interviews. On May 30 he spoke for about an hour before a large and interested audience (http://tinyurl.com/4xvcot). The video itself lasted only about two minutes, and while it was running Peckman watched the reporters carefully to prevent any surreptitious filming.

But Peckman didn't know that he was already too late for a video "exclusive." The night before, Bryan Bonner, a member of the Rocky Mountain Paranormal Research Society who had already seen

Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.



the Romanek video, got together with five members of the society to try to replicate it. They started working at about 8 PM Thursday night. "We rented ourselves a 4-foot-tall foam latex alien," he said. "We were going to buy one, but I didn't want to blow the $230." They used video 3-D animation graphics to make its eyes move. "What they're claiming would take thousands of dollars and a lot of time ... we pulled the whole thing off for $90 and in five or six hours."

Within a few days, YouTube was offering several "enhanced" versions supposedly representing the Romanek video, some with the "alien" singing or dancing. Hardly anybody, apart from a few dedicated UFO buffs, seems to have looked at Romanek's "evidence" without laughing.

But some claims about "alien abduction" are too serious to be funny. Dr. Roger Leir is a podiatrist who has made a name for himself in UFO circles by surgically removing what he claims to be "alien implants" from alleged abductees' feet, although he never seems to have any alien artifact that can actually be examined. According to Leir's book *UFO Crash in Brazil*, "the abductors told their victim that they were going to remove his eyes and this procedure would help them further the health of the world's population. This poor man totally accepted their explanation." When he got home, "His eyes had been removed in total. He was not upset and it was only on the insistence of other family members that he consented to the opinion of a qualified opthalmologist. It will probably not come as a surprise that the doctor did not believe his story and told one of his relatives that whomever removed the eyes were [sic] a very skilled surgeon and did a magnificent job." Leir concludes, "There are cases of human mutilation that go without any publicity whatsoever. It should not surprise the reader to also learn that the United States has had cases involving some non-human intelligence that has perpetrated these sinister acts upon the U.S. population. If the truth were told to the public, it goes without saying there would be an uncontrollable panic."

When the Phoenix Lander started sending back wonderful pictures from the surface of Mars, it didn't take long for intrepid interplanetary Internet explorers to start to discover more "artifacts" on the Martian surface. (I say "more artifacts" because roads, monuments, and tunnels galore have already been pointed out by Richard Hoagland and others.) Researcher John E. Combest studied the Phoenix photos of June 8 and points out three "possible artifacts." An "artifact" is to be distinguished from a "rock" by features such as "square notches, round holes, symmetry, right angles, threads, symmetrical projections." Meanwhile, a "new face on Mars" looking somewhat like a Buddha, has been identified by researcher Shawn Snook, studying photos sent back of Hale Crater by the ESA's Mars Express. For the details of these findings, see *Filer's Files #25* at www.nationalufocenter.com/. For what is probably the biggest collection of "Mars anomalies" anywhere, check out www.nationalufocenter.com/, with its Martian "forest tops," "civilization evidence," and "colossal plants."

Meanwhile, perhaps the most awe-inspiring crop circle yet discovered is said to encode the value of pi to ten decimal places. This startling data allegedly encoded in the Barbury Castle barley crop formation was discovered by Michael Reed (see www.earthfiles.com/, report of June 8). Reed explains, "On looking at the Barbary Castle pattern the ratio of the angles of the radial jumps is apparently the first ten (10) digits of the mathematical constant pi (the ratio of the of circumference of a circle to the diameter). The dot after the first radial jump is even positioned correctly as the decimal point. Take the pattern and draw radial lines from the center of the central depression though each radial jump. Take the smallest angle sector and call it one (1), then compare the other ten sectors contained angle to the smallest and pick the closest single digit for the ratio. They come out as 3.141592654." Reed notes that the ninth and tenth decimal places of pi being 35, this has been correctly rounded up to 4 for truncation at the ninth decimal. What this suggests is either that the aliens have five appendages on each tentacle, and hence use base ten arithmetic, or else that the college students who made it were math majors. □

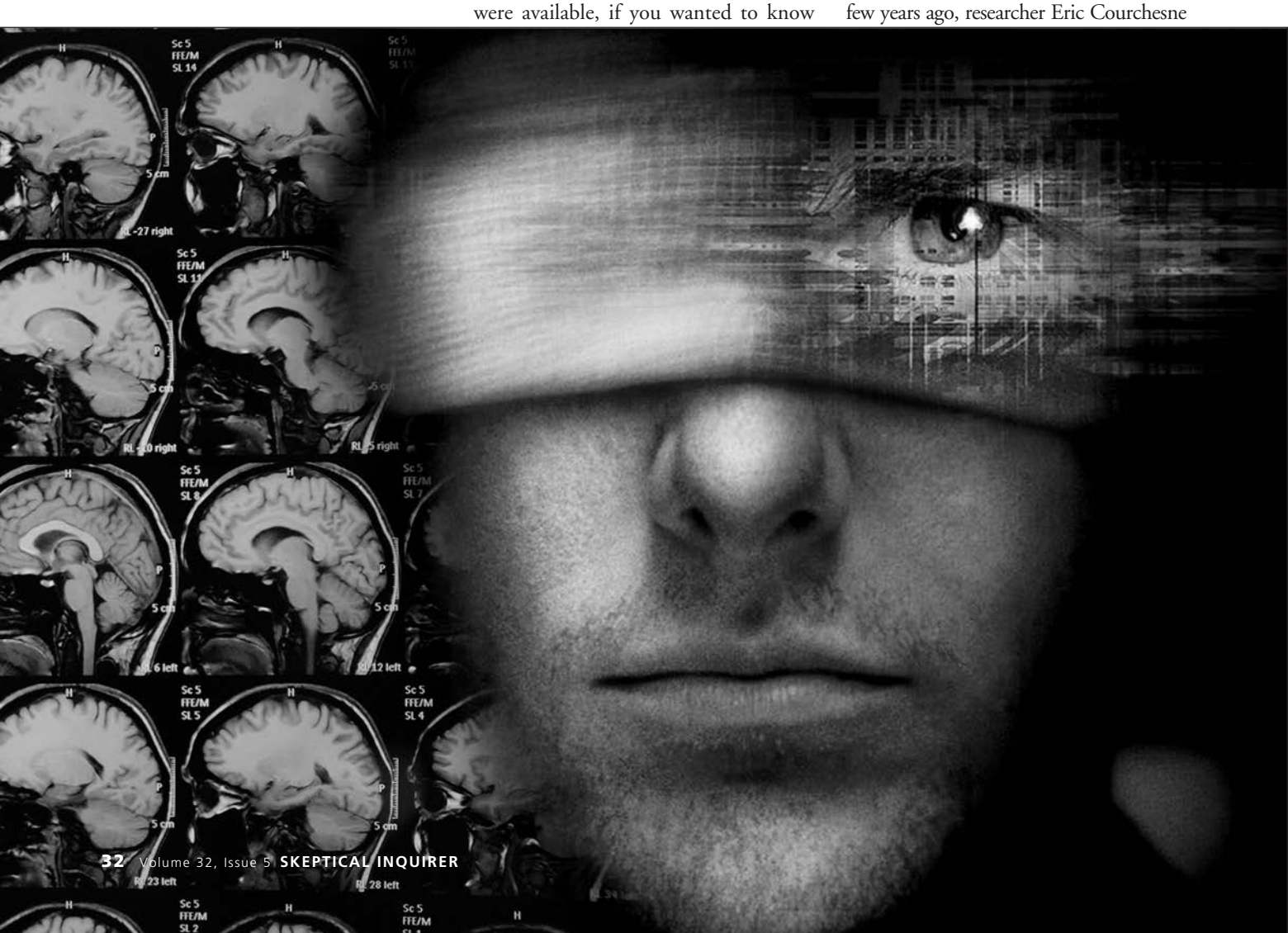
The Truth About Brain Science

There's enormous excitement these days about brain science, and well there should be. More precise scanning technologies are now letting scientists monitor brain activity in real time while people are actually behaving and thinking; historically, that's something quite new. As exciting as this is, however, I'm concerned about the hype. Claims are being made about brain research that just aren't true, and they're being accepted uncritically by the press, the public, policy makers, and even the courts.

Before I get to my concerns, let's take a quick look at recent advances, because they truly are remarkable. Take something simple such as brain size. Before the new scanning techniques were available, if you wanted to know the size of a person's brain, you had to wait until he or she died. This is still true for Alzheimer's disease; the only way to confirm the diagnosis is through examination of a dead brain. In that sense, all diagnoses of Alzheimer's are tentative—a problem that will undoubtedly be solved soon by new diagnostic techniques.

So for generations, information about brain size was based on how brains looked in dead bodies. That's far from satisfactory, because dead brains often swell or shrink, depending on the cause of death. Just a few years ago, researcher Eric Courchesne

Robert Epstein, PhD, is former editor-in-chief of Psychology Today*, contributing editor for* Scientific American Mind*, and visiting scholar at the University of California San Diego. This is the first of a new occasional SI column titled "The Skeptical Psychologist." He can be reached at repstein@post.harvard.edu.*



(2000) and his colleagues at the University of California San Diego decided to look at how the size of people's brains changes with age. Instead of looking at dead bodies, however, they used MRI technology to measure the brains of living subjects. The result was dramatic: it turns out that our brains are very small when we're babies, grow throughout childhood, reach their maximum size at about age fourteen, and then gradually shrink for the rest of our lives. At age seventy, our brain has shrunk to the size it was when we were about three. This pattern closely matches changes in cognitive abilities across the lifespan, especially changes in intelligence and memory. Before the scanning study was done, this developmental pattern in brain size was hard to see, even though it's quite distinct.

Brain size is simple fare, but some recent brain-scanning studies border on science fiction. Recently, John-Dylan Haynes (2007) and his colleagues at the Max Planck Institute in Germany used CT-imaging technology to predict what people were going to do seconds before they did it. Subjects were told to decide whether they were going to add or subtract two numbers that would shortly flash on a screen—and to keep their decision a secret. By focusing on activity in the prefrontal cortex of the brain, Haynes could predict with 70 percent accuracy which calculation the subjects would perform.

Similar technology is now allowing a few paralyzed individuals to control devices with their thoughts. This suggests a future that is not only better for those who are impaired, but one which will allow the rest of us to interface with devices—and, ultimately, with each other—just by directing our thinking in certain ways—in effect, through what will feel like "intention" or "will."

I could go on, but let's get to my concerns. There is currently *so much* excitement about brain research that many current findings are being blatantly misinterpreted. The vast majority of brain studies being conducted these days are correlational, which means they simply identify a correspondence between behavior (or emotions or thoughts) and what the brain is doing when someone is behaving (or feeling or thinking). When people who are in love think about their loved ones, for example, the ventral tegmental area of the brain lights up—the same area that lights up when people are high on cocaine.

Many of these correlational studies don't even look at the correlation in real time. They just make assumptions that may or may not be true and go from there. For example, differences in the brain activity of teens and adults are now said by some researchers to explain why teens are inherently irresponsible or lazy—even in studies in which the teenage subjects were never shown to be irresponsible or lazy (Bjork et al. 2004). The fact that teens in more than one hundred cultures around the world exhibit none of the turmoil we see in American teens is conveniently being ignored by brain researchers right now. They're simply connecting the results of brain-scanning studies to faulty assumptions about teen abilities, and their flawed claims have been accepted uncritically by the media and even by the U.S. Supreme Court (Epstein 2007). Legal scholar Stephen Morse's 2006 essay on what he calls the "brain overclaim syndrome" raises concerns about the naiveté of the courts in such matters. In 2007, the MacArthur Foundation launched its ambitious Law and Neuroscience Project to try to address the problem.

Our brains are very small when we're babies, grow throughout childhood, reach their maximum size at about age fourteen, and then gradually shrink for the rest of our lives.

Overinterpreting correlational brain studies is a big mistake, explains retired brain scientist Elliot Valenstein clearly and at length in his book *Blaming the Brain* (1998). Correlational studies tell us nothing about causation. If people who are in love show certain brain characteristics, that doesn't mean that those brain characteristics cause feelings of love. In fact, it's more than likely that contact with their lovers is producing *both* those feelings of love *and* certain changes in the brain.

Although it's true that changes in the brain can affect behavior and emotion, it's also true that behavior, feelings, and environmental events change the brain. When we exercise, smoke, take medication, learn, or experience trauma, our brains are altered. When women are raped or soldiers witness atrocities, their brains are changed. When we lose a loved one, our brains are changed, often resulting in depression.

The problem with many headlines these days is that they automatically claim, based on the latest correlational brain study, that we have identified the *cause* of depression or love or autism or Alzheimer's just because some area of the brain lights up when people have that condition. But finding correlations isn't the same as finding causes, and finding causes is often quite difficult.

References

Bjork, James M., Brian Knutson, Grace W. Fong, Daniel M. Caggiano, Shannon M. Bennett, and Daniel W. Hommer. 2004. Incentive-elicited brain activation in adolescents: Similarities and differences from young adults. *The Journal of Neuroscience* 24(8): 1793–1802.

Courchesne, Eric, Heather J. Chisum, Jeanne Townsend, Angilene Cowles, James Covington, Brian Egaas, Mark Harwood, Stuart Hinds, and Gary A. Press. 2000. Normal brain development and aging: Quantitative analysis at in vivo MR imaging in healthy volunteers. *Radiology* 216: 672–682.

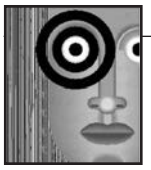
Epstein, Robert. 2007. *The Case Against Adolescence: Rediscovering the Adult in Every Teen.* Sanger, CA: Quill Driver Books.

Haynes, John-Dylan, Katsuyuki Sakai, Geraint Rees, Sam Gilbert, Chris Frith, and Dick Passingham. 2007. Reading hidden intentions in the human brain. *Current Biology* 17(4): 323–328.

Morse, Stephen J. 2006. Brain overclaim syndrome and criminal responsibility: A diagnostic note. *Ohio State Journal of Criminal Law* 3:397–412.

Valenstein, Elliot S. 1998. *Blaming the Brain: The Truth About Drugs and Mental Health.* New York: Free Press.

□



The Sweet Spirit Sounds of Rosemary Brown

Q: Whatever happened to Rosemary Brown, the British woman who claimed to take down dictation from Liszt, Schubert, and other dead composers?

D. Draganski

A: Rosemary Brown was a London housewife who, in a sort of reverse-plagiarism, created new musical compositions that she claimed were in fact written by the channeled spirits of gifted—yet demonstrably deceased—composers such as Beethoven, Chopin, and Bach. Brown, who long believed she had psychic powers, wrote in her autobiography *Unfinished Symphonies* that when she was seven years old, the ghost of composer Franz Liszt appeared and told her that he would work with her in the future.

Decades later he did just that, she claimed, and Brown achieved a level of popularity in the 1970s. After Liszt's visit, a parade of famous, dead musicians supposedly visited Brown, creating new works through her (curiously, all the composers learned to speak English after their deaths, thus allowing Brown to understand their musical direction and dictation).

Rosemary Brown's supporters claimed that her music was too complex to have been created by the musically untrained Brown alone, and that her music displayed an uncanny understanding of the nuances in famous composers' works. Yet there is no way to scientifically validate these claims; such observations are quite subjective and may be a case of people seeing what they wish or expect to see (or, in this case, hearing what they wish to hear). While some experts were impressed, many others concluded that the works were merely hack imitations done in the style of the old masters or variations on extant compositions. Her *New York Times* obituary (Martin 2001) noted the "tidal waves of more or less good-natured ridicule from most of the music establishment."

So how did she do it? It seems that while Brown had her critics, many of her claims escaped close, skeptical scrutiny. Various theories were proposed to explain her ability, ranging from spirit contact to telepathy to Brown having secretly discovered and practiced previously unknown works by the great musicians. Here, the principle of Occam's Razor comes in handy: the simplest explanation (or the one with the fewest assumptions) consistent with the facts is often the best. The most likely explanation is simply that Brown exaggerated her musical ineptitude.

Brown did not achieve fame and fortune because no one else alive could have created the compositions. Instead, Brown was notable because her compositions were supposedly from the dead—strongly supported by the fact that she had little or no musical ability or training. As one of Brown's defenders, British composer Richard Rodney Bennett noted, "if she is a fake . . . she must have had years of training" (Martin 2001). This is the assumption that needs to be more closely investigated.

Brown told several different stories about just how much musical training she had, and of course she had strong incentive to downplay her abilities. Some sources, such as Jon Klimo's book *Channeling* (1987), claim that Brown "had no musical education." Brown's Wikipedia entry claims that she had taken one year of piano lessons, while the *New York Times* noted "three years of piano lessons." It seems that this crucial issue was never fully investigated, and it's possible Brown had many years of training and practice that she declined to reveal. According to a piece by Harry Edwards (2005) in the *Investigator* (Australia), Brown eventually "admitted to belonging to a musical household and being a competent musician and pianist." If this is true, then it shows that Brown at the very least lied about her musical training and skills and strongly suggests fraud.

Brown became famous in her middle age, and many aspects of her early life are vague (including her musical education and even her birth date, which was probably 1916 but cited by various sources as 1917 or 1938). Brown's claims would have been far more believable had she begun producing the dead composers' work as a teenager. Instead, Brown had nearly fifty years to study and practice before "suddenly" channeling decomposing composers. Rosemary Brown died in 2001; it is probably just a matter of time before another "medium artist" claims to channel Brown's spirit in his or her own music.

Benjamin Radford is managing editor of the SKEPTICAL INQUIRER. His first book, co-authored with Bob Bartholomew, was Hoaxes, Myths, and Manias: Why We Need Critical Thinking.

References

Anderson, Rodger I. 2006. *Psychics, Sensitives, and Somnambulists: A Biographical Dictionary with Bibliographies.* McFarland & Co., Jefferson, N.C.

Edwards, Harry. 2005. Rosemary Brown. *Investigator* 104, September. Available online at www.adam.com.au/bstett/PaBrown104.htm.

Martin, Douglas. 2001. "Rosemary Brown, a Friend of Dead Composers, Dies at 85." *New York Times*, December 2.

Klimo, Jon. 1987. *Channeling: Investigations on Receiving Information from Paranormal Sources.* Jeremy P. Tarcher/St. Martin's Press, New York, p. 162. □

Corporate Self Interest and Vagus Nerve Stimulation for Depression

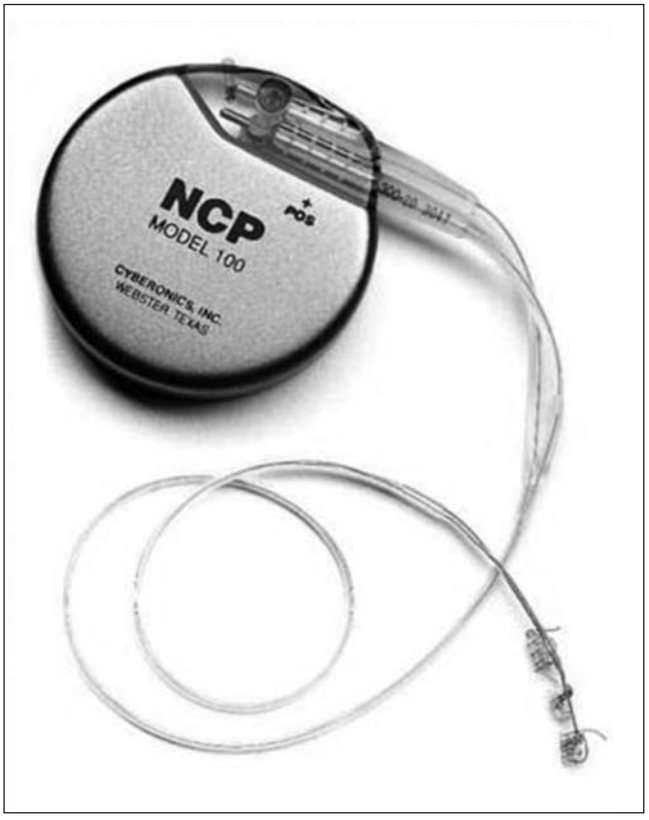
An American corporation has pressured the FDA and psychiatric organizations, researchers, clinicians, and patients to use its expensive and unproven Vagus Nerve Stimulation device for serious depression. This advocacy compromises scientific and medical integrity.

PETER BARGLOW

Corporate economic interests are exerting more and more influence on American psychiatric treatment and research. A prime example is the marketing to psychiatrists of an unusual medical device called the Vagus Nerve Stimulator for the treatment of severe depression. Its manufacturer, Cyberonics Inc., is a Houston, Texas-based company listed on the NASDAQ stock exchange with a June 27, 2008, market capitalization of $555.68 million. The corporation has spent millions of dollars promoting its unproven treatment to psychiatric organizations and researchers, to clinical psychiatrists, and to mentally ill patients. Such advocacy compromises scientific integrity, distorts the medical decision-making process, and allows profit motives of a few powerful business leaders to override the health needs of many seriously ill patients.

The damaging influence of money has been widely discussed regarding other medical specialties. For example, in late September 2007, *The New York Times* reported on the conflict of interest represented by "six-figure fees" paid illegally during 2006 by Medtronic to spinal surgeons to influence their use of medical instruments manufactured by the company. Until now, the harmful consequences of special-interest money for psychiatric treatment had only been directed toward individual psychiatrists. In Minnesota, where the law requires drug companies to report payments to physicians for lectures, consulting, and research, psychiatrist J.E. Simon reportedly earned more than $350,000 between 2004 and 2006 through payments from the drug manufacturers Eli Lilly and AstraZeneca. Simon championed drugs made by these companies for the treatment of schizophrenia while serving on the State Medicaid Drug Formulary Committee (Lohn 2007).

Peter Barglow, MD, is a clinical professor of psychiatry, University of California at Davis Medical School. He was a tenured professor at Northwestern University Medical School where he started the psychiatry department's residency training program. Dr. Barglow is a distinguished fellow of the American Psychiatric Association. He has directed psychiatric research funded by the federal governments' National Institutes of Health and the National Institute of Mental Health but none funded by medical-device or pharmaceutical corporations.



The VNS is an implanted pacemaker-sized stimulator. It has a wire lead that attaches to the vagus nerve by means of an incision on the neck. The procedure takes a few hours and the patient is usually released from the hospital the next day. Despite paying for many studies, Cyberonics failed to show that the device works for treatment of depression.

But the orchestrated, persistent effort by Cyberonics to promote its Vagus Nerve Stimulation Therapy (VNS) with multiple public and private individuals and groups is a more recent and more alarming phenomenon. Cyberonics tried to exert its influence at the highest reaches of the federal government's regulatory process at the FDA as well as the locally provided continuing-education classes every licensed psychiatrist is required to take. The company poured money into the universities where young psychiatrists are trained, into the journals that keep them up-to-date, and into support of mental health research relevant to the VNS device. Some leaders of the psychiatric profession acted as the corporate executives' willing accomplices.

To profit from a new medical treatment, a corporation has to gain approval from the federal Food and Drug Administration (FDA). Then it must win approval for reimbursement from Medicare, which provides benefits to some 80 million Americans. Once Medicare approves a treatment, private health insurers generally will also pay for it. Only then can the financial investments of health-care corporations realize large gains.

Better Treatment Needed for Depression

Cyberonics' Vagus Nerve Stimulator is a pacemaker-like device that is surgically implanted at the base of the neck, in contact with the vagus nerve. The vagus is the tenth of twelve cranial paired nerves, the fibers of which transmit messages between the brain and the heart, lungs, and stomach, among other organs. A physician uses external software to program the device to send electrical stimulation to the vagus nerve at regular intervals. Patients are given a magnet they can place on the skin over the device to temporarily turn it off. Side-effects include alterations to voice quality or loudness (68 percent), cough (29 percent), and breathing problems (23 percent). On rare occasions, wires have been left in the chest cavity of a patient after the device was removed.

Electrical stimulation in the form of electroconvulsive therapy (ECT) has statistically been proven capable of elevating the depressed mood of patients, but this is not so for the much weaker stimulation provided by the VNS device. In contrast to ECT, which works against depression by producing electrical stimulation in the brain sufficient to produce a seizure, VNS therapy does not produce seizures. In 1997, when the FDA initially approved VNS for the treatment of refractory epilepsy, it was intended to prevent seizures. Thus, the logic of using it for depression has been shaky from the start.

But a better treatment for refractory depression would indeed have been a boon. Depressed patients suffer from a profound paralysis of will, an inability to sleep, work, or love. Their despondence sometimes leads to suicide. Their hopeless mood does not always fully respond to multiple antidepressive medications, psychotherapy, or even to ECT. From a commercial standpoint, there are far more people with depression than with epilepsy—using VNS for treating depression offered Cyberonics the chance to reach a much larger consumer market.

No Evidence VNS Works

Despite paying for many studies, Cyberonics consistently failed to show that the device works. In 2005, a twelve-week study conducted by a research team at the University of Texas Southwestern Medical Center at Dallas randomly assigned patients to two groups. One had the Vagus Nerve Stimulator surgically implanted and turned on, and the second group received sham therapy—the device was implanted but not turned on. Neither the patients nor the researchers knew who was in the patient group with the device turned on. This competent study failed to show statistical significance, meaning that the device produced no demonstrable effect (Rush, Marangell, et al. 2005).

Follow-up studies (George et al. 2005; Rush Sackeim et al. 2006) that showed modest patient improvement after one year were flawed because patients knew whether their device was turned on or not. Some also received ECT or antidepressant medications, making it impossible to isolate the effect of the Vagus Nerve Stimulator. Cyberonics then funded many other research studies of the device at over a dozen prominent U.S. medical schools.

The scientific evidence that emerged from these investigations was characterized by questionable scientific data, small sample sizes, few statistically significant findings, and the absence of randomized, controlled research methods. Cyberonics' goal in funding research in the name of advancing science seemed intended to generate laudatory claims for vagus nerve stimulation therapy in the scientific and popular media and to create a pool of psychiatrists who would lobby for FDA and Medicare approval. If a patient believed the VN Stimulator had been helpful, Cyberonics widely publicized the favorable testimonial.

Politics Drives FDA Approval

VNS had already been approved by the FDA in 1997 for the treatment of epileptic seizures that were not prevented by standard anticonvulsant medication. Then in 2004, Cyberonics applied for FDA approval for VNS therapy for the treatment of depression. On August 11 of that year the FDA sent Cyberonics an initial opinion that "vagus nerve stimulation therapy for depression was not approvable." Cyberonics responded by soliciting a large volume of letters and phone calls from psychiatrists and depressed patients protesting the non-approval letter and even tried to have the office of the Secretary of the U.S. Department of Health and Human Services intervene on its behalf. This pressure provoked a series of biweekly discussions between Dr. Lester Crawford, acting Director of the FDA, and his own appointee, Dr. Daniel G. Schultz, director of the FDA's Center for Devices and Radiological Health. A five-member FDA review team then evaluated the VN Stimulator for ten months, and after consulting twenty internal scientists and officials, determined that the benefits of VNA did not outweigh its risks. The review team thus recommended that it not be approved to treat depression. Yet on July 15, 2005, Schultz overruled the findings of all his advisors and approved the Vagus Nerve Stimulator as a therapy for depression.

Cyberonics' goal in funding research in the name of advancing science seemed intended to generate laudatory claims for vagus nerve stimulation therapy in the scientific and popular media and to create a pool of psychiatrists who would lobby for FDA and Medicare approval.

The FDA approval triggered a U.S. Senate Finance Committee investigation and letter of criticism of the approval process (Grassley 2006). Overriding the negative verdict of an official FDA review committee is quite unusual, and during the prior decade it had happened only once, at which time the director

Engraving of Eduard Friedrich Weber (left, 1806-71) and Ernst Heinrich Weber (1795-1878), German physiologists. Together the brothers measured the velocity of the pulse wave in the human arterial system in 1825. In 1845 they showed that stimuli passing down from the brain through the vagus nerve inhibited the heart; if the nerve was cut the heart beat more rapidly.

confirmed the review committee's decision. Dr. Lester Crawford, who appointed Schultz, was a political appointee, known to support accelerated FDA-approval procedures for new products compatible with demands of the drug industry. He resigned his post just before pleading guilty in October 2006 to misdemeanor charges for failing to disclose his financial interest in FDA-regulated pharmaceutical companies (Kaufman 2006).

Political pressure on behalf of corporate interests is not unique to Republican administrations. According to a 1998 *San Jose Mercury News* article, a Sunnyvale company featured a photograph of its president hobnobbing with Representative Joe Barton of Texas. The accompanying article noted that the two men agreed that President Clinton's accelerated approval process had helped Silicon Valley industry. Officials who cheat to advance special interests may of course appoint honest officials who resist corporate pressure, but this may not have been the case here. (In 2007, Congress did pass some regulations allowing the FDA more freedom from industrial and political pressures.)

Marketing to Psychiatry's Leaders

After Cyberonics gained FDA approval for the Vagus Nerve Stimulator, it intensified its efforts to influence the psychiatric profession with the goal of gaining Medicare approval for the device. Already in 2004 it had hired Dr. A.J. Gelenberg, editor of the influential publication *Biological Therapies,* as a consultant. In January 2007, the journal featured an article with the title, "VNS: Gradual Benefits with Some Risks" (Gelenberg 2007). It described research published in a 2006 *British Journal of Psychiatry*. But the study group included only eleven patients, all of whom knew that they were receiving vagus nerve stimulation. There was no randomization nor were there untreated controls. It seems doubtful that Gelenberg would have publicized this trivial research had he not also been on the payroll of Cyberonics.

In 2006, *Neuropsychopharmacology,* the journal of the American College of Neuropsychopharmacology (ACNP), published a favorable assessment of the possible mechanisms of the action of the Vagus Nerve Stimulator by Charles Nemeroff (Chair of Psychiatry at Emory Medical School) and seven coauthors (Nemeroff et al. 2006). At the time of the publication of the article Dr. Nemeroff was editor-in-chief of the journal. The first draft of the paper was prepared by a writer who was hired by Cyberonics but not included in the authorship. Nemeroff and six other authors were paid Cyberonics consultants, constituting a clear conflict of interest that was undisclosed in the publication of the article. Not listing the authors' fiscal affiliation with Cyberonics violated the journal's own rules, which the editor, Dr. Nemeroff, would have been expected to enforce. Cyberonics pre-ordered 10,000 reprints of the article for rapid dissemination. Nemeroff resigned as the journal's editor in August 2006 under pressure from ACNP members. The controversy led the American College of Neuropsychopharmacology president Ken Davis (2006) to admit that "there is no ambiguity over the fact that the paper's acknowledgement section violated the stated policy of our journal." He promised reforms. Since up to 46 percent of the college's annual meeting's budget is funded by pharmaceutical or device maker corporations, this is not a simple challenge.

Cyberonic's promotion of the Vagus Nerve Stimulator to the American Psychiatric Association (APA) was even more direct. Since 2002, the corporation has sponsored the APA Newsletter, *Mental Health Works*. In 2004, Cyberonics provided an unrestricted grant to the APA's Institute of Psychiatric Services. In 2005, it donated $10,000 to the American Psychiatric Foundation, the educational and philanthropic arm of the APA. In early November 2006, *Psychiatric News,* the weekly newsletter of the APA, ran a $1^{1}/_{2}$-page advertisement for the VN Stimulator. The same year, Cyberonics donated generously to the APA annual meeting and gave at least $15,000 during 2006 to the APA's Workplace Mental Health collaboration.

Cyberonics reaped the reward for its generosity to the APA on September 9, 2006. On behalf of its 36,000 member psychiatrists, APA President Dr. Pedro Ruiz wrote in an official letter that the APA supported Medicare's reimbursement for the Vagus Nerve Stimulator. Ruiz took this action after stating that he had consulted with the APA's Council on Research but without any review of the safety and efficacy of the Vagus Nerve Stimulator. Charles Nemeroff, the Cyberonics consultant mentioned earlier, was a member of the council who recused himself from the vote. But his favorable attitude toward Medicare approval must have been known by other research council members.

The APA has a national and regional advisory committee of psychiatrists who represent the interests of psychiatry in setting Medicare policies and gather information for the national APA.

By September 6, 2006, Cyberonics had sought—and been denied—approval for VNS by ten local Medicare contractors (including the New England and Midwest systems) from fourteen states. Dr. Ruiz did not solicit their input about the Vagus Nerve Stimulator, and his letter putting the APA on record favoring Medicare reimbursement makes no mention of the opposing conclusions reached by regional leaders associated with his own organization.

The author and a research colleague later questioned the APA's recommendation to pay for an unproven, expensive treatment and received a reply from its Office of Healthcare Systems and Financing containing the following statement: "Members of the APA Research Council were asked only to determine . . . whether to recommend to CMS that Medicare consider VNS to be a reasonable and necessary treatment . . ." (Barglow 2007). The APA's affirmative answer directly contradicted the conclusion finally issued by Medicare as indicated below.

Persuading Psychiatrists Through "Education" Meetings

Cyberonics went even further in marketing its sole product. The company promoted the VN Stimulator to influential clinical psychiatrists by funding dozens of university and local hospital "Grand Rounds." Grand Rounds offers Continuing Medical Education (CME) credits to doctors that states require for continued licensing. Cyberonics offered $1,500 for "unrestricted educational grants" to institutions that agreed to let the corporation present information and training about its Vagus Nerve Stimulator.

One of these sessions almost took place in November of 2006 at my local psychiatric hospital. The weekly Grand Rounds devoted to the treatment of refractory depression with VNS was already scheduled when our institution's program chairman checked up on the sponsor and scheduled speakers. Charles DeBattista, Chief of Depression Disorders research at Stanford's Department of Psychiatry, whose work was partly supported by Cyberonics, was listed as one of the presenters, and Cyberonics had sent in a substancial check.

Dr. DeBattista's colleague at Stanford was Dr. Alan Schatzberg, Chair of Psychiatry, and a close collaborator of Charles Nemeroff, who had left the APA Research Council in 2005. Like Nemeroff, Schatzberg had been the topic of intense national scrutiny during 2006 about conflicts of interest (Jacobs 2006). He was administering a $600,000-a-year Stanford research grant to study Mifepristone (RU-486, better known as the "morning after" birth control pill), as a possible antidepression medication. The maker was Corcept Therapeutics, and Schatzberg chaired its scientific advisory board while serving (with Dr. Nemeroff) on its board of directors. Nemeroff had not disclosed that he had a financial connection with Corcept in 2003 when he published a review article in *Nature Neuroscience* that made favorable mention of RU-486 as well as two other products in which he had a financial stake. In 2006, Dr. Schatzberg owned millions of dollars of Corcept shares, and Dr. Nemeroff was reported to own 60,000 shares of stock as far back as October 2003 (Peterson 2003). Dr. Schatzberg might in the future be in the same leadership position that Dr. Ruiz of the APA was in when the latter promoted Medicare approval of VNS therapy, since currently he is president elect of the American Psychiatric Association. Perhaps he will be involved in seeking FDA and Medicare approval for Mifepristone—like VNS treatment, it has many side effects and complications.

By September 6, 2006, Cyberonics had sought—and been denied—approval for VNS by ten local Medicare contractors (including the New England and Midwest systems) from fourteen states.

But to return to our local matter, the hospital's program chairman, growing concerned about conflicts of interest, notified the Cyberonics representative that the speakers for the Grand Rounds would have to sign ethical documents disclosing their relevant financial ties. After a few days, the Cyberonics representative replied that "there had been a glitch" and that the meeting had to be canceled. However, many other psychiatric institutions have accepted Cyberonics funding and allowed the corporation to use Grand Rounds as a vehicle for promotion. Now this practice is coming under official scrutiny. A letter from the U.S. Senate Finance Committee, signed by Senators Grassley and Baucus (2006), insists that the national Accreditation Council for Continuing Medical Education ensure that "CME providers it accredits act so as to operate with the required level of independence, and without allowing program content to be controlled or influenced by drug company sponsors" (Grassley 2006). This requirement may jeopardize or terminate Cyberonics' marketing strategy.

Cyberonics' leaders' business ethics are also being questioned by those skeptical about the company's practice of scientific research. The company was subpoenaed by the Justice Department in June 2006 over stock option practices benefiting its chairman. In December 2006, the company's CEO and CFO resigned under pressure. But Cyberonics pressed on in its campaign to win Medicare approval. A first small setback came on December 26, 2006. The FDA requested a January 2007 review of further studies of VNS, which the FDA had required the company to complete after initial FDA approval of the

device. Cyberonics was found to be behind schedule in recruiting patients who would agree to implantation of the device for VNS research; consequently, the company planned to give the device away without charging. The FDA's announcement triggered an immediate 8 percent drop in Cyberonics' stock price.

Medicare Decides

As the national Centers for Medicare and Medicaid (CMS) prepared to make its ruling, it had received 1,843 public comments, 1,831 of which supported the Vagus Nerve Stimulator, generated by Cyberonics' campaign. These favorable comments included 618 people suffering from depression—122 were patients who had been implanted with the device. The American Psychiatric Association and 230 individual psychiatrists also wrote in support. One of the twelve negative comments came from the Washington, D.C.-based nonprofit group Public Citizen, whose representative, Peter Lurie (2007), pointed out that the device had failed its only properly designed study and that follow-up studies also failed to show that it worked.

Medicare finalized it ruling May 6, 2007: it would not reimburse treatment with the Vagus Nerve Stimulator. "Vagus nerve stimulation is not reasonable and necessary for treatment of resistant depression," and research "provides little evidence that a patient will experience a health benefit as a direct result of VNS therapy." This decision flatly contradicts the earlier APA endorsement noted above and describes serious research flaws in Cyberonics' sponsored research. The Medicare decision was perhaps possible because the responsible officials were civil service employees and not, as was the case with the FDA's decision, presidential appointees.

But Cyberonics has already initiated a new marketing offensive with the help of its paid psychiatric consultants. On May 20, 2007, the corporation provided an educational grant to the American Psychiatric Association's annual meeting for "An Interactive Forum on Novel Treatments." Leading off the day-long panel was an introduction by the program chair, the ubiquitous Dr. Charles Nemeroff, followed by two scientific presentations promoting VNS treatment (bundled now with other therapies) for treatment-resistant depression. *Neuropsychopharmacology,* now led by a new editor who replaced Dr. Nemeroff, published yet another pro-VNS MRI study (Nahas et al. 2007). This time it was revealed that the research authors were paid by Cyberonics, and Dr. Nemeroff's name is absent, but the study's results are just as unconvincing as before.

Despite absence of scientific evidence that it works, for many years Cyberonics loudly asserted that its $25,000-per-patient device could cure the serious depression that afflicts nearly four million Americans. In fact, widespread use of the VN Stimulator has the potential to harm the millions of Americans who suffer from treatment-resistant depression and also to damage their overall health care. Using this therapy could siphon off millions of health-care dollars, diverting funds from effective treatments while driving up health plan costs or leading to cuts in other health-care benefits.

Unfortunately, the story of Cyberonics is not an isolated example of collusion between the psychiatric establishment, political appointees, and leaders of corporations that profit from mental illness. In 1961, President Eisenhower warned of the growing influence of the "military-industrial complex," referring to a symbiotic relationship between America's military forces, its weapons industry, and its political interests. Today, America's mental-health system is in the grip of a psychiatry-industrial complex that puts corporate profit and career aggrandizement ahead of the needs of the mentally ill. If this trend is not stopped, depressed patients will get high-priced, corporate-marketed snake oil instead of bona fide treatment.

References

Barglow, P., and I. Feinberg. 2007. VNS therapy questioned. Letter to the Editor. *Psychiatric News* 42(8): 42–3.

Davis, K. 2006 (Aug. 27). Letter to Members. *American College of Neuropsychopharmacology.*

Gelenberg, A.J. 2007. VNS: Gradual benefits with some risks, *Biological Therapies in Psychiatry* 30(1): 3.

George, M.S., A.J Rush, L.B Marangell, et al. 2005. A one year comparison of vagus nerve stimulation with treatment as usual for treatment-resistant depression. *Biological Psychiatry* 58: 364–73.

Grassley, C. 2006. Review of the FDA's approval process for the vagus nerve stimulation treatment-resistant depression. Available online at *http://finance.senate.gov/press/Gpress/02_2006%20report.pdf.*

Grassley, C., and M. Baucus. 2006. United States Senate Committee on Finance: Letter to Accreditation Council for Continuing Medical Education, December 19.

Jacobs, P. 2006. Science Critics make issue of financial ties. *San Jose Mercury News*, California, July 10.

Kaufman, M. 2006. Former FDA chief illegally held stocks. *Washington Post*, Oct. 17.

Lohn, M. 2007. Minnesota law sheds light on drug companies. *Associated Press.* Aug 27.

Luire, P. 2007. Medicare right to reject brain stimulation device. *Public Citizen.* Feb. 6.

Nahas, Z., C. Teneback, and J.H. Chae. 2007. Serial vagus nerve stimulation in treatment-resistant depression. *Neuropsychopharmacology.* 32(8): 1649–68.

Nemeroff, C.R., H.S. Mayberg, S.E. Krahl, et al. 2006. VNS therapy in treatment-resistant depression: Clinical evidence and putative neurobiological mechanism. *Neuropsychopharmacology* 31:1345–55.

Peterson, M. 2003. Undisclosed financial ties prompt reproval of doctor. *The New York Times*, August 3.

Rush, A.J., L.B. Marangell, H.A. Sackheim, et al. 2005. Vagus nerve stimulation for treatment-resistant depression: a randomized, controlled acute phase trial. *Biological Psychiatry* 58: 347–354.

Rush, A.J., H.A. Sackheim, L.B. Marangell, et al. 2005. Effects of 12 months of vagus nerve stimulation in treatment-resistant depression: A naturalistic study. *Biological Psychiatry* 58: 355–63. □

The Bipolar Bamboozle

With the broadening and softening of the criteria needed to label someone with bipolar disorder and aggressive marketing campaigns by pharmaceutical companies, millions of people are being told they have a severe psychiatric disorder and are being prescribed powerful antipsychotic medications. In fact, most are normal people dealing normally with everyday life issues.

STEPHEN RAY FLORA
and SARAH ELIZABETH BOBBY

"Bipolar disorder," originally known as manic-depression, has been acknowledged as a problem for centuries. However, until very recently, it was considered a very rare and severe condition. Now diagnoses of "bipolar spectrum" disorders are reaching epidemic proportions. Nothing has changed in humans' biology or natural environment to account for this rise in diagnoses. What does account for the increase is a "softening" of the criteria needed to diagnose a person with bipolar, an increase in aggressive marketing of new profitable prescription drugs for bipolar, and psychiatrists "upcoding" problems to get higher insurance reimbursement rates. A likely outcome of this increase in labeling people "bipolar" is not that more people in need of help are getting it but instead that

millions of people are unnecessarily being put on powerful antipsychotic medications.

As the name suggests, people labeled bipolar are believed to alternate between the emotional extremes, or poles, of mania and depression. Prior to the publication of the third edition of psychiatry's *Diagnostic and Statistical Manual* (DSM-III) in 1980, a patient would have to be hospitalized with a manic episode before a diagnosis of manic-depression was made. At that time rates of mania were estimated to be 0.4 to 1.2 percent of the population; prior to that, rates were estimated to be even lower. Currently some estimates of bipolar are as high as 10 percent of the population (Angst, et al. 2003), but rates of hospitalization for mania have not increased. What happened?

Just as a child with a hammer discovers new things that "need" to be hammered, when psychiatry finds new drugs it discovers new people who "need" to be treated with them. In 1949 Australian doctor John Cade reported that lithium salts could be effective in the treatment of "psychotic excitement" or mania (Cade 1949). As knowledge of this finding spread, so did the diagnosis of mania, as noted by Philip Mitchell:

> One of the major driving forces determining the livelihood of particular diagnoses in medicine has been the availability of effective remedies. Psychiatry has not been exempt from this phenomenon, with the introduction of lithium into clinical practice in the late 1960s and early 1970s leading to substantial increases in the diagnosis of bipolar disorder over that time. For example, in Australia, Parker et al. demonstrated that in New South Wales, the diagnosis of bipolar disorder increased dramatically (with a concomitant decrease in the diagnosis of schizophrenia) from the mid-1960s to the mid-1970s, despite there being no overall change in the total number of those with "functional psychoses." (Mitchell 2006, 279)

While there was no change in the number of people with "functional psychoses," by 1968 more than 200 psychiatrists had applied to the FDA to study and use lithium for mania. Concurrently, three companies applied to market lithium. The FDA approved the applications and in 1970 approved the use of lithium to treat manic episodes of manic-depressive psychosis (Johnson and Gershon 1999). With the publication of the third edition of the DSM in 1980, the "mania" diagnosis was replaced with "bipolar disorder," and the rates of bipolar remained stable.

In the last decade, rates of children being diagnosed with bipolar has increased by *forty times, and the rates of diagnosis for adults almost doubled* (Morero, et al. 2007)*!* Nothing overtly changed in American culture—not dietary practices, there was no mass exposure to toxic waste, and neither parenting nor educational practices were overhauled. Instead a culmination of less than scientifically justified factors resulted in the current explosion of people, many of them children as young as four years old, being diagnosed and misdiagnosed as "bipolar."

Stephen Ray Flora is a psychology professor and behavior analyst at Youngstown State University and author of Power of Reinforcement *(SUNY Press 2004) and* Taking America off Drugs: Why Behavioral Therapy is More Effective for Treating ADHD, OCD, Depression, and Other Psychological Problems *(SUNY Press 2007). E-mail: srflora@ysu.edu. Sarah Elizabeth Bobby is a psychology graduate of Youngstown State University.*

Just as a child with a hammer discovers new things that "need" to be hammered, when psychiatry finds new drugs it discovers new people who "need" to be treated with them.

The Tenuous Analogy: A Pharmaceutical Sleight of Hand

Without exclusive rights to a patented pharmaceutical, and with bipolar still a relatively rare "disorder," sales of lithium, or any drug to treat this problem, could not be profitable. This rapidly changed when psychiatrists started to use epileptic, anticonvulsant, antiseizure medications in attempts to control mania (Healy 2006). Seizures occur in epileptics when there is sudden excessive firing of neurons; the initial firing is known as "kindling." Anticonvulsants work by "stabilizing" the neurons and preventing or at least reducing the frequency of kindling and thus seizures. Perhaps because both seizures and mania appear to involve a high state of "excitability," Robert Post (e.g., Post and Weiss 1989) suggested that manic states might be prevented with antiseizure medications analogous to how they prevent seizures in epileptics. But there is a difference in the excitability of neurons during seizures and the emotional excitability of mania. There is no evidence that nerurons fire uncontrollably and excessively during states of mania as they do during seizures.

Nevertheless, with this analogy, the term "mood-stabilizer" came into vogue, and in 1995 Abbott Laboratories' Depakote became the first *anticonvulsant* approved by the FDA for treating mania. Yet, there is no agreement on what the term "mood stabilizer" means (Healy 2006), and although they may be called "mood-stabilizers," anticonvulsants have never been shown to actually stabilize moods; rather, their use is simply based on an analogy, not science. Using anticonvulsants for mania, even though not developed for it, and calling anticonvulsants "mood stabilizers" though they have never been shown to stabilize

When the FDA approves an existing drug for the treatment of a new disease, drug companies rake in the profits without expending capital.

moods, are just more examples of drug companies' well-worn strategy of finding new, profitable "indications" for selling old, less profitable, drugs (see Flora and Sellers 2001 for another example). In the study "The Impact of Mood Stabilizers on Bipolar Disorder: The 1890s and 1990s Compared," North Wales researchers found that despite the wide-spread use of mood stabilizers, rates of readmission for bipolar patients is higher now (77 percent) than it was one hundred years ago (8 percent). In the 1890s, 81 percent of the discharges were recovered, but only 17 percent in the 1990s were recovered. These findings forced the researchers to conclude: "These data are incompatible with simple claims that mood stabilizing drugs 'work'" (Harris, Chandran, Chakraborty, and Healy 2005). Indeed, these findings indicate that not receiving treatment works better than pharmaceutical intervention. Similarly, University of Illinois researchers recently found that only 5 percent of medicated schizophrenia patients recover, but 40 percent of non-medicated patients recover (Harrow, Grossman, Jobe, and Herbener 2005; also see Harrow and Jobe 2007). In other words, schizophrenia patients are eight times more likely to recover if they are *not* on medications!

"Softening" Bipolar Sickness

According to Webster's New Riverside University dictionary, "bipolar" is defined as "1. Relating to or having two poles. 2. Relating to or involving both of the earth's poles. 3. Having or expressing two contradictory ideas or qualities" (1988). Thus, if "manic-depression" is "bipolar," then the states of mania and depression need to be *polar opposites* as are the Earth's north and south poles. Consisting of the polar states of mania and severe depression, the original notion of "bipolar disorder" matched the dictionary definition of "bipolar." However, disregarding the very definition of *bipolar*, the *psychiatric* notion of "bipolar disorder"

An individual who is simply very happy at times may be said to have periods of "hypomania" rather than mania; and if sometimes they are sad too they may be labeled "cyclothymic" within the bipolar spectrum.

has been broadened and "softened" to include milder, decidedly nonpolar mood states in the now-called "bipolar spectrum disorders" (e.g., Akiskal, et al. 2000). Consequently, an individual who is simply very happy at times may be said to have periods of "hypomania" rather than mania; and if sometimes they are sad too they may be labeled "cyclothymic" within the bipolar spectrum. "Softening" is analogous to (geologically) studying Brazil and Mexico and claiming to be studying Earth's poles. While this is merely ridiculous in geology, it is actually harmful in psychiatry. Yet this is exactly what is happening, because it is profitable for psychiatry and pharmaceutical companies. Even though normal life events expected to elicit happiness and sadness are recognized as contributing factors by psychiatrists, people experiencing happiness and sadness are nevertheless labeled cyclothymic in the bipolar spectrum, opening the door to reimbursable psychiatric care and unnecessary pharmaceutical prescriptions. For example, Akiskal et al., report:

> slightly under 10% of a mental health clinic's patients conformed to subsyndromal [nonpolar] mood changes over extended periods of time. These where young adults who presented clinically because *of social disruptions in their lives, such as romantic failure, financial extravagance, repeated change of line of work or college studies, frequent geographical moves, and polysubstance abuse.* The underlying affective diathesis was validated on the basis of phenomenological criteria that involved biphasic subsyndromal

> [nonpolar] changes in energy, activity, mood, and cognition, each phase typically lasting from 2 days to a week; some oscillated more in a depressive direction, . . . [t]he subthreshhold oscillation of hypomanic and subderessive periods occurring in 6.3% of the population at large. (Akiskal et al. 2000, S10, emphasis added)

What Akiskal et al. are arguing is that even though emotions do *not* reach the level of being a psychiatric syndrome ("subsyndromal") and are caused by common emotional life events (e.g., "romantic failure, . . . repeated change of line of work or college studies, frequent geographical moves, and polysubstance abuse"), a significant portion of the population with these normal emotions should nevertheless be labeled "bipolar." Indeed, their original article in this line of work was titled "Cyclothymic Disorder: *Validating* Criteria *for Inclusion* in Bipolar Affective Group" (Akiskal et al. 1977, emphasis added). Thus normal happiness and sadness become disorders "treatable" with pharmaceuticals.

Diagnosing children who have behavioral difficulties with bipolar disorder (or any psychiatric disorder) and subsequently medicating them is particularly disturbing.

"Upcoding"

As if "softening" the diagnoses of bipolar to cast a wider net for paying clients wasn't questionable enough, psychiatrists have been "upcoding" individuals, particularly children, to more severe "bipolar" diagnoses to get greater insurance reimbursement. SUNY-Stony Brook psychiatrists Joseph Blader and Gabrielle A. Carlson (2007) found that from 1996 to 2004 rates of bipolar diagnoses among adults increased 56 percent, increased 296.4 percent among adolescents, and increased 438.6 percent among children! They suggest:

> higher rates of inpatient admissions among youth associated with BD [bipolar disorder] may reflect . . . "upcoding" to putatively more severe conditions for reimbursement (107) . . . [and that] Clinicians may have responded to the higher hurdles for obtaining payer's authorization for inpatient care by "upcoding" severe behavioral disturbances to a major mood disorder that connotes a more pernicious illness. (111)

Apparently, to gain these increased diagnoses, children with behavioral difficulties and conduct problems are receiving "upcoded" diagnoses of bipolar disorder (Blader and Carlson 2007). Diagnosing children who have behavioral difficulties with bipolar disorder (or any psychiatric disorder) and subsequently medicating them is particularly disturbing. The evidence is conclusive that to correct conduct and other behavioral problems, behavioral management programs and parent training programs are superior to medicating children (Flora 2007).

Selling Sickness with Direct-to-Consumer Advertising

In 1997 the FDA began to allow direct-to-consumer advertising, making the U.S. and New Zealand the only two countries in the world that allow the practice. This change opened the door for self-diagnoses, medical-seeking behavior, and disease mongering. According to writers in the *British Medical Journal*:

> Some forms of "medicalisation" may now be better described as "disease mongering"—extending the boundaries of treatable illness to expand markets for new products. Alliances of pharmaceutical manufacturers, doctors, and patient groups use the media to frame conditions as being widespread and severe. Disease mongering can include turning ordinary ailments into medical problems, seeing mild symptoms as serious, treating personal problems as medical, seeking risks as diseases, and framing prevalence estimates to maximize potential markets. (Moynihan, Heath, and Henry 2002, p. 886)

This is exactly what has occurred with bipolar disorder. Advertisements for Abilify and Seroquel, two antipsychotic medications approved for bipolar disorder, are ubiquitous in periodicals, daytime television, and even plastered on phone booths. Just as anticonvulsants were used as "mood stablizers," the current drugs being pushed for bipolar were developed for schizophrenia. According to company press releases, Abilify was approved in 2002 for the treatment of schizophrenia, producing over 3.7 million prescriptions between 2002 and 2005. Seroquel was approved for the treatment of schizophrenia in 1997 and produced sales of $2.8 billion in 2005. Pharmaceutical patents typically last for seven years, but if "new indications" can be found, then the patent can be extended for several more years, which will protect and likely increase profits. Using this strategy, the makers of Seroquel gained FDA approval for the treatment of mania in 2004 and for depressive episodes in 2006. The makers of Abilify gained FDA approval for "maintenance treatment" of bipolar in 2005.

Direct-to-consumer advertising coupled with happiness and sadness fitting into "softer" bipolar categories made for fertile ground in which drug companies could solicit for mental illness and thus increase sales. Because sales of drugs require a medical diagnosis, drug advertisements suggest to potential customers that they may have a "medical disorder" such as bipolar. Advertisements tell consumers to focus on feelings, behaviors, and sensations consistent with the disorder. Drug company-sponsored "educational" Web sites offer self-tests designed to lead the taker to admit symptoms consistent with bipolar. The test taker is encouraged to print out the results and share them with a doctor who can prescribe medication. "The Mood Questionnaire" Web site is nothing more than a promotion for Seroquel by its

makers, AstraZeneca pharmaceuticals. The site tells survey takers: "*Regardless of your results*, we recommend that you print and share this questionnaire with a qualified health care professional who can provide you with a full evaluation" (emphasis added).

Showing up at a doctor's office with a printout and concerns about bipolar will influence some doctors to prescribe medication. Previous research revealed that when "patients" visited doctor's offices unannounced with complaints of adjustment difficulties, they received a prescription for medication 10 percent of the time. But when they made complaints of adjustment difficulties and mentioned a specific medication, they received a prescription for antidepressant medication 55 percent of the time (Kravitz, Epstein, Feldman, et al. 2005). Based on these findings, it is not hard to guess what will happen when a patient shows up with a questionnaire on bipolar from drug makers.

Side Effects

Medicating people for happiness and sadness is not without consequence. Antipsychotics used to treat bipolar work by interfering with the body's dopamine and serotonin systems. These neurotransmitters are known to be involved in one's ability to feel pleasure and initiate activities. Interfering with these abilities are likely reasons why up to 75 percent of patients refuse to take prescribed antipsychotics (Flora 2007, 113).

Common side effects of Seroquel include dry mouth (44 percent), drowsiness (34 percent), high triglycerides (23 percent), headaches (21 percent), agitation (20 percent), dizziness (18 percent), high cholesterol (16 percent), weakness (10 percent), constipation (10 percent), and fatigue (10 percent). Common side effects of Abilify include headaches (30 percent), anxiety (20 percent), insomnia (19 percent), nausea (16 percent), constipation (13 percent), vomiting (12 percent), and dizziness (11 percent) (eMedTV). Many other common side effects occur in between 2 and 10 percent of those who take these drugs. For example, significant weight gain occurs in 6 percent of people taking Seroquel and in 6.8 percent of people taking Abilify. This weight gain often leads to diabetes or morbid obesity. With the drug-induced decreased ability to feel pleasure and numerous aversive side effects, eating may be one of the only sources of enjoyment available for people labeled "bipolar."

In conclusion, the broadening and softening of the criteria necessary to label one with bipolar disorder coupled with aggressive campaigns by pharmaceutical companies results in millions of people being told they have a severe psychiatric disorder. These misled patients are being prescribed powerful antipsychotic medications when in fact they are normal people dealing normally with ordinary life issues.

References

Akiskal, H.S., M.L. Bourgeois, J. Angst, R. Post, H. Moller, and R. Hirschfeld. 2000. Re-evaluating the prevalence of and diagnostic composition within the broad clinical spectrum of bipolar disorders. *Journal of Affective Disorders,* (59): S5–S30.

Akiskal, H.S., A.H. Djenderedjian, R.H. Rosenthal, and M.K. Khani.1977. Cyclothymic disorder: Validating criteria for inclusion in the bipolar affective group. *American Journal of Psychiatry,* (134): 1227–1233.

Angst, J., A. Gamma, F. Benzaai, V. Ajdacic, D. Eich, and W. Rossler. 2003. Toward a re-definition of subthreshold bipolarity: Epidemiology and proposed criteria for bipolar-II minor bipolar disorders and hypomania. *Journal of Affective Disorders,* (73): 133–146.

Blader, J.C., and G.A. Carlson. 2007. Increased rates of bipolar disorder diagnoses among U.S. child, adolescent, and adult populations, 1996–2004. *Biological Psychiatry,* (62): 107–114.

Cade, J.F.J. 1949. Lithium salts in the treatment of psychotic excitement. *Medical Journal of Australia,* (14): 349–352.

eMedTV. 2008. *Abilify Side Effects.* Available online at http://bipolar-disorder.emedtv.com/abilify/abilify.html. Accessed Jan. 8, 2008.

eMedTV. 2008. *Seroquel Side Effects.* Available online at http://bipolar-disorder.emedtv.com/seroquel/seroquel.html . Accessed Jan 8, 2008.

Medicating people for happiness and sadness is not without consequence. Antipsychotics used to treat bipolar work by interfering with the body's dopamine and serotonin systems.

Flora, S.R. 2007. *Taking America Off Drugs: Why Behavioral Therapy is More Effective for Treating ADHD, OCD, Depression, and other Psychological Problems.* State University of New York Press. Albany, NY.

Flora, S.R. and M. Sellers. 2003. 'Premenstrual dysphoric disorder' and 'premenstrual syndrome' myths. SKEPTICAL INQUIRER, (27): 37–42.

Harris, M., S. Chandran, N. Chakraborty, and D. Healy. 2005. The impact of mood stabilizers on bipolar disorder: The 1890s and 1990s compared. *History of Psychiatry,* (16): 423–434.

Harrow, M., L.S. Grossman, T.H. Jobe, and E.S. Herbener. 2005. Do Patients with schizophrenia ever show periods of recovery? A 15-year multi-follow-up study. *Schizophrenia Bulletin,* (31): 723–734.

Harrow, M., and T.H. Jobe. 2007. Factors involved in outcome and recovery in schizophrenia patients not on antipsychotic medications: a 15-year multi-follow-up study. *Journal of nervous and Mental Disease,* (195): 406–414.

Healy, D. 2006. The latest mania: Selling bipolar disorder, *PloS Med3* (4): e185.

Johnson, G., and S. Gershon.1999. Early North American research on lithium. *Australian and New Zealand journal of Psychiatry,* (33): S48–S53.

Kravitz, R.L., R.M. Epstein, M.D. Feldman, et al. 2005. Influence of patients' requests for direct-to-consumer advertised antidepressants. *Journal of the American Medical Association,* (293): 1995–2002.

Mitchell, P.H. 2006. Bipolar disorder 40 years ago: A critical period of transition. *Australian and New Zealand Journal of Psychiatry,* (40): 279–280.

Moreno, C., G. Laje, C. Blanco, et al. 2007. National trends in the outpatient diagnosis and treatment of bipolar disorder in youth. *Archives of General Psychiatry,* (64): 1032–1039.

Moynihan, R., I. Heath, and D. Henry. 2002. Selling sickness: The pharmaceutical industry and disease mongering. *British Medical Journal,* (324): 886–891.

Post, R.M., and S.R.B. Weiss. 1989. Kindling and manic-depressive illness. In: Bolwig T.G. Bolwig and M.R. Trimble, editors. *The clinical relevance of kindling.* London: Wiley, pp. 209–230.

Webster's II: New Riverside University Dictionary. 1988. Boston, MA; Houghton Mifflin. □

'We Couldn't Say It in Print If It Wasn't True'

Akavar's Version of Truth in Advertising

An ad for a weight-loss product falsifies its own slogan by printing outright lies. An attempt to find the advertised "published research" becomes a surreal odyssey.

HARRIET HALL

I like to read advertisements for quack remedies. I've come to suspect that "clinically proven" means "we gave it to three of our friends and got them to say it worked." When the ads cite published medical studies, I like to track down and read those studies. I usually find that they have nothing whatsoever to do with the product in question and I get a lot of amusement from the pseudoscience and the testimonials.

I really hit the jackpot when I noticed an ad for a weight-loss product called Akavar 20/50. It made the usual claims: eat all you want and still lose weight. But it had the best advertising slogan ever: "We couldn't say it in print if it wasn't true!" I laughed out loud. Anyone can say anything in print until they get caught. These diet ads all say things that aren't true, and the Federal Trade Commission can't begin to catch them all.

The ad describes research results on Akavar as "staggering." It claims to have published scientific research showing that twenty-three out of twenty-four patients using Akavar's active ingredient lost weight and describes a controlled, randomized clinical trial of the actual product in which twenty-three out of twenty-four patients lost "a substantial amount of weight." Two questions immediately came to mind: why were the numbers the same in both studies, and if a single active ingredient worked just as well, why was there any need to develop the Akavar formulation?

There was a toll-free number to call for further information. I called and asked where I could read the two studies they referred to. The man who answered was flummoxed: "No one's ever asked me that before." He had to go for help. Finally he came up with the names of two journals but no further information.

I searched PubMed for anything in either of those journals that might even remotely be considered studies of Akavar and couldn't find anything. I wrote the company's customer service representative and asked for more information. That led to the following surreal e-mail exchange over the next month and a half.

September 30: [Me] Your ad for Akavar describes a high rate of success in clinical studies. I'd like to read those studies for myself. I called your 800 number and the person who answered told me there were two studies published in the *Journal of Human Nutrition and Dietetics* and in the journal *Medical Psychopharmacology*. He was unable to give me the full citations, and I have searched PubMed and elsewhere and have been unable to locate the articles. Could you give me the exact citations (date, author, title of article, journal, volume, and page number)? Or better yet, could you possibly send me electronic copies of the articles? I would really appreciate it.

October 9: [Akavar] Thank you for your interest in Akavar 20/50. I will be happy to submit a request to our Compliance dept. and have these studies prepared for you to send via email or via mail. We request to know as to what use these will be used for and will require a phone number and address. As soon as I have this information I will submit the request and have these prepared for you to save any trouble of having to look these up yourself. Thanks so much.

October 9: [Me] I would prefer you send them by e-mail.

It made the usual claims: eat all you want and still lose weight. But it had the best advertising slogan ever: "We couldn't say it in print if it wasn't true!" I laughed out loud. Anyone can say anything in print until they get caught. These diet ads all say things that aren't true, and the Federal Trade Commission can't begin to catch them all.

What they will be used for? To help me decide for myself whether there is adequate evidence to recommend Akavar 20/50 to patients.

October 10: [Akavar] Thank you so much for this. I will forward this request to compliance and send via email when they have finished preparing the study.

October 15: [Me] I'm still waiting. The delay is making me wonder... if you really have legitimate scientific studies to back up your claims, why are they not posted on your web site or linked to the PubMed abstracts or at least listed in such a way that they can be located by interested physicians?

October 17: [Akavar] I apologize for the delay. I will follow up with our Compliance/Legal department to see if they have prepared these for you or not. I will let you know shortly.

October 30: [Me] It is now October 30, and I still have not received the studies. If they are not available in electronic format, all I really need is a proper citation: title of article, name of journal, names of authors, date, volume and page. If these studies really exist, and if they really support your product, your company certainly doesn't seem very proud of them! If you cannot provide me with the citations, I will be forced to assume they

Harriet Hall, a retired physician also known as The SkepDoc, is one of five MD authors of the Science-Based Medicine *blog and the author of* Women Aren't Supposed to Fly: The Memoirs of a Female Flight Surgeon. *She is a* Skeptical Inquirer *contributing editor. E-mail: harriet.hall@comcast.net.*

do not exist and I will report your company for false advertising.

November 2: [Me again] OK. Still no response. I will have to give you a deadline. If you have not sent me the citations by November 5, I will take it as an admission that you are crooks who tell deliberate lies in your advertising and I will report you to the FTC. I will remind you that ALL I'm asking is that you tell me where I can find the clinical studies you advertise as supporting your product.

November 2: [Akavar] I just spoke with our Legal department as I have been out of the office this week. They informed me that they are contacting you via mail as they are requesting more information from you. I can not handle this request other than our legal department. This was sent to the address you provided me below and should be received within normal postal delivery time. [I never received anything by mail.] I apologize sincerely for this delayed response. It should be taken care of now. Thank you.

November 5: [Me] You have GOT to be kidding!! I did NOT ask for "all" studies relating to your product. I did NOT ask for any proprietary information. All I asked for was the correct citations for the two published studies referred to in your advertising.

November 2: [Me] How about you give me the e-mail address of the legal department so you don't need to act as intermediary? There is no reason for them to request more information from me—that is ridiculous! And even if they are mailing me copies of the studies, there is no reason they can't also immediately provide me with the citation information via e-mail. Reputable companies usually display that kind of information proudly on their web sites, often with a link to the studies.

November 5: [Akavar] Our compliance/legal department has prepared the following for you and are sending via email at your request via the above attachments. Please respond accordingly. Thanks again for your patience.

[Attachment] We have received your request to provide you with all studies relating to our Akavar 20/50 product. Due to the confidential nature of these studies, we cannot release these studies without a signed Non-Disclosure Agreement. Our standard Non-Disclosure Agreement is enclosed. Pleases [*sic*] review and sign the Agreement. Upon receipt of the signed Non-Disclosure Agreement, we will happily provide you the information you requested. . . . [This was accompanied by a complicated, multipage legal document.]

November 5: [Me] You have GOT to be kidding!! I did NOT ask for "all" studies relating to your product. I did NOT ask for any proprietary information. All I asked for was the correct citations for the two published studies referred to in your advertising. This is not anything that requires any signature or agreement. Published studies are in the public domain. This is becoming a surreal experience. Perhaps I'd better start all over again by copying my initial request: [My initial e-mail was copied here.]

Let's make this really simple:

(1) Are there two published studies?

(2) If so, please provide me with the information I will need to locate and read those studies: Name of author(s), title of article, name of journal, volume, page number and date of publication.

November 7: [Akavar] Any update from MKF?

November 7: [Me] No. Who or what is MKF?

November 13: [Akavar] We regret that you refused to sign the NDA, which would have allowed us to provide you the highly confidential, proprietary data related to Akavar. We are, however, enclosing the citations for the published articles relating to Akavar's efficacy. [Lieberman, H.R., Tharion, W.J., Shukitt-Hale, B., Speckman, K.L., & Tulley, R. (2002). *Psychopharmacology* (Berl), 164(3), 250–261. Andersen, T. and J. Fogh (2001). *J Hum Nutr Diet* 14(3): 243–50.] Any representation on your part that the published studies comprise the full substantiation for Akavar 20/50 or that the substantiation is lacking in any way would be false and intentionally misleading on your part since your [*sic*] were not privy to the full documentation. Again because of your refusal to sign a simple NDA. [This letter was signed by a paralegal.]

November 13: [Me] You did not provide the titles of the studies, but I easily found them. I can see why you didn't provide the titles, and I can see why I didn't find them when I looked before, because it is obvious that they were not studies of Akavar 20/50.The Lieberman study is titled "Effects of caffeine, sleep loss, and stress on cognitive performance and mood during U.S. Navy SEAL training. Sea-Air-Land." The Andersen study is "Weight loss and delayed gastric emptying following a South American herbal preparation in overweight patients." The herbal preparation was a mixture of yerba mate, guarana, and damiana. The patients initially lost a few pounds, but those who took the active drug for 12 months "maintained" their weight during that period. The abstract of the study does not say that the study participants were instructed not to alter their eating habits. And the numbers of patients do not correspond to either of the studies described in your ads.

Your ad says, "this is scientific fact, documented by published medical findings." Are you now admitting that there are no published clinical studies of Akavar 20/50 and that the statements in your ads are false?

I never heard back from them, and I decided I had had

enough fun. I reported them for false advertising. I was not the only one to complain. A class action suit was filed against the company for "fraudulent, deceptive, and otherwise improper advertising and marketing practices." The lawsuit says, "Akavar has not undergone scientific evaluation by a team of doctors, nor has Akavar been tested in controlled random clinical trials." The lawsuit also mentions that Akavar is identical to another of the company's products, Estrin-D, which is also the subject of an unrelated lawsuit.

Later a friend contacted the company and signed the nondisclosure agreement to see what would happen. All he got was a written summary of some unspecified studies with no authors or publications listed.

Imagine a pharmaceutical company telling me they couldn't divulge the title of an article about their new drug in the *New England Journal of Medicine* unless I signed a nondisclosure agreement! What planet are we on? Even worse, imagine if a pharmaceutical company asked the FDA to approve a new drug on the basis of two studies that had little or nothing to do with that drug, insisting they had more proof, but it was a secret!

I don't know why I'm surprised. Quacks have to defend themselves any way they can, since they can't defend themselves with facts.

You might be curious to know what ingredients are in this miracle product. Nothing even remotely likely to promote weight loss except for caffeine and related xanthines. Drinking lots of coffee is probably just as effective.

A recent issue of the *Natural Medicines Comprehensive Database* newsletter said:

> Akavar 20/50 is a new supplement promoted for weight loss. It contains a long list of ingredients, including large amounts of caffeine from yerba mate, guarana, green tea, and kola nut extracts. It also contains damiana, ginger, schisandra, scutellaria, vitamin B6, magnesium, and other ingredients. Some research suggests that a few of these ingredients might help for weight loss, but this is preliminary. There is no proof that this specific combination of ingredients is effective. Product advertising says, "Eat all you want and still lose weight. . . ." Remind patients that if it sounds too good to be true, it probably is.

And remember, the *Natural Medicines Comprehensive Database could* say that in print if it weren't true—but they wouldn't! □

THE BRAIN ON JUSTICE
Continued from page 26

our emotional responses.

Science cannot settle philosophical disputes directly, because there is a fundamental distinction between what is (matters of fact) and what ought to be (matters of value). Nonetheless, the researchers who authored the *Science* paper set out to see what human beings actually do (as opposed to what they should do), and the results are bound to make philosophers think for a while. Hsu and collaborators performed functional Magnetic Resonance Imaging of their subjects' brains while they were considering the issue of how to allocate resources to children in an orphanage in Uganda. The experiment was designed so that the researchers could statistically control for the effect of fairness as distinct from optimality considerations while monitoring how the brain integrates the two types of information. The results were spectacularly clear.

A region called the putamen, which is a part of the basal ganglia, was particularly active when the subjects were considering the efficiency aspect of the problem at hand. However, when their attention shifted to the fairness question, the active region turned out to be the insula, which is part of the paralimbic zone. This, as it turns out, is in line with previous findings about these two regions of the brain: the insula was already known to be part of the emotional response system, while the putamen had been described as involved in rewarding computation and learning. The emerging picture from the neurobiological study, then, is that human beings approach issues of optimality using components of their rational brain, but fairness is judged by their emotional circuitry. Even more interesting is the finding by Hsu et al. that there is a third crucial area of the brain that was activated during the experiment, the so-called caudate/septual subgenual region. While this is also located in the basal ganglia, like the putamen, one of its functions appears to be integrating the information from the putamen and the insula and actually emerging with a decision that balances the optimality and allocation criteria. In other words, the brain's rational and emotional circuitry come together in a way that can be thought of as the neurological equivalent of a philosophical debate among Mill, Kant, Plato, and Hume!

What research like the study carried out by Hsu and collaborators tells us is not that science is about to take over philosophy, as biologist E.O. Wilson has famously advocated (see Thinking About Science, SI, March/April 2008), but rather that we are seeing an increasingly interdisciplinary approach to complex questions, with a broadening area of overlap between fields of inquiry. This requires some philosophical background on the part of scientists, as is in fact displayed at the beginning of the *Science* article, because philosophy helps to frame the question. At the same time, philosophers can no longer afford—if they ever could—to continue their debates independently of the discoveries of science, or they risk being left behind in the exciting quest to understand the nature of human moral decision making. □

The Myth of Nibiru and the End of the World in 2012

An astronomer tries to counter misinformation on the Internet about claims of a supposed rogue planet and an impending catastrophe, encountering troubling credulity, scientific illiteracy, and conspiracy thinking along the way.

DAVID MORRISON

Some proponents claim Nibiru is depicted in this Sumerian seal.

SKEPTICAL INQUIRER readers may not be aware that a rogue planet on a 3,600-year orbit is about to enter the inner solar system and visit a catastrophe upon Earth. This threatening planet was discovered by the ancient Mesopotamians, who named it Nibiru. It was known also to the Mayans, who associated it with the end—December 2012—of their "long count" calendar. Although astronomers and space scientists are tracking Nibiru, this information is being kept from the public as part of a worldwide conspiracy. This official silence cannot be maintained for much longer, however, since by 2009 Nibiru will be visible to the naked eye from the southern hemisphere, and already Earth's axis is tilting, changing the length of the day under its influence. As one aficionado recently wrote to me: "Why are you lying? It's coming, and everyone knows it."

I was introduced to this conspiracy theory in December 2007, when I began to receive questions about Nibiru submitted to NASA's "Ask an Astrobiologist" Web site (http://astrobiology.nasa.gov/ask-an-astrobiologist). I normally receive about a dozen questions per week from the public dealing mostly with life in the universe, but sometimes they include UFOs and visiting aliens. Nibiru seemed different, since it was claimed to be an actual planet that was being tracked by astronomers but hidden from the public. Knowing that the astronomers of the world, both professional and amateur, are a free-spirited group who couldn't keep a secret even if ordered to, I assumed that Nibiru was the sort of Internet rumor that would quickly pass.

However, I also remembered that Nibiru had briefly been prominent among conspiracy buffs in 2003, when there was a similar rumor of the coming destruction of our civilization. The source of this information was a specific warning said to have been sent to the people of Earth by an advanced alien civilization on a planet orbiting the star Zeta Reticuli. A woman named Nancy Lieder claimed to be channeling this information from the Zetans, who warned that a worldwide cataclysm would strike the Earth in May 2003. Phil Plait described this situation in detail on his "Badastronomy" Web site (www.badastronomy.com/bad/misc/planetx/). As it turned out, May 2003 passed with no pole shift or other cataclysms, so I figured that would end the Nibiru interest. Yet here it was again, the same story recycled with an end-of-the-world date reset to December 2012.

In the six months since I first mentioned Nibiru on my Web site, this topic has threatened to take over "Ask an Astrobiologist." I now receive at least one question per day ranging from anguished ("I can't sleep; I am really scared; I don't want to die") to the abusive ("Why are you lying; you are putting my family at risk; if NASA denies it then it must be true").

This article is based on more than one hundred questions submitted in the first four months of 2008, only a few of which were actually answered online. Except for some condensing, I've left the questioners' text as it was originally submitted.

Initial Questions: The Distinction between Nibiru, Planet X, and Eris

Although the name of the Sumerian god Nibiru is most often given to this object, I quickly learned that some Web sites were also calling it Planet X or Eris. Planet X is a generic term used by astronomers over the past century for any unknown or hypothesized planets beyond Pluto. Eris is an actual, newly discovered dwarf planet, a little larger than Pluto but much farther away. By conflating these, some were claiming that NASA had found Nibiru or that Eris was going to fly past Earth in 2012.

Q: I was on the NASA home page and searched Planet Niburu. Come to find out there actually is a planet beyond Pluto and they are calling it Niburu. Some said Planet Niburu didn't exist but now we know it does! There haven't been many straight answers on this subject so I don't really expect to get the total truth, but here I go. Is there ANY chance of a Niburu flyby in 2012? And if there is why don't the public have a right to know so that we can prepare ourselves?

A: *I'm sorry if the NASA web page confused you. I just checked, and there is no mention of Nibiru other than recent statements that it does not exist and is a hoax. The web site does include a 2005 news story on the discovery of one of the transneptunian dwarf planets, 2003UB313. UB313 was subsequently given the name Eris, and there is plenty of information about Eris on the web, including a good introduction in Wikipedia. But this has nothing to do with Nibiru. Nibiru is a hoax, linked to a religious cult, and having nothing to do with science.*

Q: How can you call Nibiru a hoax when your own IRAS detected it and you issued a press release in 1982 which made it to eight major newspapers?

A: *When looking into this sort of thing, you need to read past the first paragraph, since new data are always coming along in science. IRAS (the first infrared survey satellite, which flew more than 20 years ago) cataloged 350,000 infrared sources, and initially many of these were unidentified (which was the point, of course, of making such a*

David Morrison is the Senior Scientist at the NASA Astrobiology Institute, where, among other things, he answers questions from the public submitted to the Web-based "Ask an Astrobiologist." A fellow of the Committee for Skeptical Inquiry and author of numerous books and articles, Morrison is a recipient of the Carl Sagan Medal of the American Astronomical Society for his contributions to the public understanding of science.

survey). All of these observations have been followed up by subsequent studies with more powerful telescopes both on the ground and in space. The rumor about a "tenth planet" erupted in 1984 after a scientific paper was published in Astrophysical Journal Letters *titled "Unidentified point sources in the IRAS minisurvey," which discussed several infrared sources with "no counterparts." But these "mystery objects" were later found to be distant galaxies. The bottom line is that Nibiru is a myth, with no basis whatever in fact. To an astronomer, persistent claims about a planet that is nearby but invisible are just plain silly.*

Q: I have been reading the questions and answers about Nibiru.

Time is not speeding up, and the days are not shorter. You know as well as I do that there are still the usual 24 hours in the day, not 16! Please don't be scared; the entire Nibiru story, as well as any concerns about Eris threatening Earth, are a hoax, nothing more.

I am glad you say it does not exist. However Eris does exist and I see they were going to call it Xena . . . planet X. On this Website when you type in Nibiru Eris comes up and it clearly states it is the 10th planet. Will Eris do a flyby since it is considered a planet and the 10th one? Is Eris coming toward us? Could this even be possible that we would be thrown off our axis? Are Pluto and others really slightly of their normal gravitational paths because of this planet that is supposedly coming toward us? Why do they say time is speeding up because of the magnetic pulse this planet is creating? Is this true that there are only really 16 hours a day now because time is moving faster? Is that possible? Why do the days seem so much shorter? I am scared about this whole 2012 thing. Eris seems to be in the position that everyone says Nibiru is and the same size. Maybe we are asking the wrong question. Maybe we should be asking about Eris and not Nibiru. Thank you for your time as I am scared to death!

A: *There is no factual basis for the many Nibiru stories. This Internet chatter originated from the claim by Nancy Lieder that she was warned about this planet by aliens from the star Zeta Reticuli. In the absence of real information, however, people speculate and embellish this fictional story. One such addition is to link Nibiru with "Planet X," a term used for many years by astronomers to refer to any unknown planet that might exist beyond Pluto. Far from being a real object, this term indicates an unknown or undiscovered object (that is why it is called "X"). Another false link is with Eris, the largest of the dwarf planets recently found beyond Neptune, designated 2003 UB313 when it was discovered in 2003. Before Eris was given its formal name, its discoverer, Mike Brown of Caltech, informally referred to it as Xena, a word play on "Planet X." The name Eris was officially adopted by the International Astronomical Union in 2006. However, this has nothing to do with Nibiru. Nibiru is supposed to be a large planet on a highly elliptical orbit with a period of 3,600 years, which comes onto the inner solar system and will disrupt Earth in 2003 (the original claim) or 2012 (the current claim). Eris is a dwarf planet (smaller than the Moon) with a period of 557 years, currently far beyond Neptune or Pluto at a distance of about 10 billion miles. Its orbit will never bring it into the inner solar system; the closest it will come, in about 2255, is 4 billion miles. Eris does not match the fictional object Nibiru in distance, orbit, size, or any other property, and it does not threaten Earth in any way. The other items you mention from the Internet are untrue. Neither Pluto nor any other transneptunian object is deviating from its normal path. Time is not speeding up, and the days are not shorter. You know as well as I do that there are still the usual 24 hours in the day, not 16! Please don't be scared; the entire Nibiru story, as well as any concerns about Eris threatening Earth, are a hoax, nothing more.*

Trying to Contain the Topic

At the beginning of February, I combined several similar questions in the hopes that I could lay this topic to rest and get back to writing about real science.

Q: Recent questions about Nibiru: (1) I have found a lot of stuff about a so called planet. Planet x or Nibiru. If anything they say [is] possible like revolving around the sun clockwise and it has been said that its orbit is way far out past Pluto. Also there are statements that it has a 3600-year orbit around the sun and that [it] is supposed to return in the near future. Is this possible at all? It sounds fishy to me, but there are supposed pics of it and a lot of scientist talk about it. I even wikipedia searched it. I would just like to find out some info please. (2) Nibiru does exist and I can prove it. Nibiru is in the old testament Exodus 6:4. and you are watching Nibiru from a lab on the south pole. also I have images from a telescope of Nibiru. and people from the southern hemisphere can see Nibiru in the daytime. is that proof enough for you? (3) many signs tell that something big is out there coming and why wouldn't it be true about nibiru / planet x? why build a telescope at the south pole an photos and such with this redish dwarf star moving fast in 1983 it was 50 billion miles away and 10 years later it is alot closer is it hiding behind the sun i know you all dont want to start a world wide panic. (4) I read were you said that Nibiru is a hoax. My question to you is why would anyone let the american population know about such a catastrophy? Isnt it the governments job to keep the population at ease? (5) What is this a picture of? http://www.greatdreams.com/nibiru-possible.jpg It's said to be Nibiru, but as you say Nibiru is a hoax. so what is this really a photo of?

A: *I hope this is my last comment on the Nibiru hoax, but questions like the above five keep coming in. Most of the entries on the Internet about Nibiru are false. Wikipedia has it correct when they write that "Nibiru is a name in Sumerian, Babylonian astrology associated with the god Marduk, generally accepted as referring to the planet Jupiter." The rest is a hoax, including all the "stuff" questioner #1 found on the Internet. Questioners #2 and #3 mention the astronomical observatory at the South Pole, but I assure you these astronomers are not looking at Nibiru. The Antarctic is a great place for infrared astronomical observations, and it also has the advantage that objects can be observed continuously without the interference of the day-night cycle. Questioners #3 and #4 seem to think that the government would hide information about Nibiru and the catastrophe coming in a few years, but I can't imagine why. My experience is, in fact, that sometimes parts of the government do just the opposite, as in the frequent references to various terrorist threats. In any case, the job of NASA scientists is to discover and tell the truth! Finally, questioner #5 asks me to identify two pictures. I can only guess that these might be images of an expanding gas cloud (nebula) ejected by a star in its old age. They are obviously very distant, since we see stars in the foreground superposed on the nebula.* [A sharp-eyed reader later identified these photos as an expanding gas shell around the star V838 Mon].

Questions Become Angry and Threatening

Having called Nibiru a hoax on a NASA Web site, I had opened myself to a growing series of abusive emails (which I did not answer). Here is a sample:

Q: I can't believe This!, you still have the gall to lie to the hole world about planetX Nibiru, How dare you do that, yet you keep on calling youself a Senior Scientist, shame on you, people must keep on knocking hard on your door until you give up and come clean.

Q: Sorry but you say Nibiru is a Hoax? Doesnt Exist? So maybe The Sumerian people doesnt exist also! Nibiru does exists and its the new Planet discovered in 2005 size of Pluto. It is talked about centurys ago in Sumerian Civilization. Stone Plates with the planet were found! Its possible to say that this planet giant orbit passes between Sun and Earth and causes the Glaciar Eras to happen. I talk about the facts! Like science usually does! So how can you say its a hoax???

Q: I hope I can get an honest answer and not a lie. I would like to know more about this Nibiru thing. Not that your really going to tell me the truth here are you? I have been told that by May 2009 it will be seen by the average person is this true? I will not take kind to someone endangering my family because they want to keep a secret.

Q: The question isn't why are you lieing to the people about the exsistance of Nibiru, the question is do you think you will be spared when it's effects come to pass.

Q: Why are we (the people) not informed of a possible catastrophe, especially one of this magnitude to take into consideration. I really don't expect the truth from you guys.

Q: So if you all are watching Eris and it's trajectory, why can't you tell us about how it's going to come between the sun and the earth? Where is the info on your webpage of the *true trajectory* which will cause the perturbing of all our solar system heavenly bodies? If this is nothing to worry about, then *why don't you talk about its trajectory? Why don't you have people partnering to watch it, track it and be actively talking about this huge new planet that is coming?* Why are you so quiet about this new discovery? Your behavior is suspicious and your actions will be discovered soon so I would suggest a full disclosure.

Q: I know for a fact that Nibiru is a planet the Sumerians knew this. We discovered Pluto in 1930 but the Sumerians knew it existed in 4500 B.C. Voyager 2 made the first close-ups from Neptune and Uranus in 1986 and we saw how the planets looked like up close. The Sumerians in 4500 B.C. knew that already. How is it that there info is so accurate and Nasa with all this technology cannot find Nibiru? Is Nasa keeping this planet from us?

Q: I can't believe This!, you still have the gall to lie to the hole world about planetX Nibiru, How dare you do that, yet you keep on calling youself a Senior Scientist, shame on you, people must keep on knocking hard on your door until you give up and come clean.

Q: Why do you continue to claim this is a hoax? what is it in 1983 the heavenly body that you discovered then covered up saying it was nothing? why is it that closer to 2012 we see increased volcanic activity, earthquakes, tsunamis, flooding, droughts, and much more? its not from global warming! this activity is happining on other planets as well.

Q: I think NASA is trying to cover up the up coming of planet X or Nibiru in year 2012. Is it because this world is over population and some of us need to die? Why is NASA being fishy about this?

Q: Why would you people rather die than warn people and prepare for this kind of thing?!

Q: Don't play stupid with me because you are obvisly not going to answer my question with truth not like its your fault but the goverments and higher powers.

Q: I understand you don't want to loose your job. So I know your

answer about Nibiru. You, Nasa, the USA government and whoever else will deny till it will be undeniable. Mankind is going to disappear and nothing will change this truth. I hope you couldnt live with this lie over your shoulders anymore.

Q: Everybody knows that planet x and nibiru exist, when is NASA and the government going to come clean and stop bold face lying to the american people. People have a right to survive this calamity. No wonder everybody say's NASA stands for never a straight answer!

A: The website you sent me is pretty funny. For example, the statement that the Earth's axis had tilted and the Sun had shifted from its correct place in the sky; anyone with eyes can see this is not true.

The Questions Keep Coming

Following are a few of the questions from March and April, which I (perhaps foolishly) have continued to try to answer. These include some new twists, such as the claim that the Sun will be in the center of the Milky Way Galaxy in December 2012, and this is what will cause "pole shifts" and other cosmic catastrophes.

Q: Now if the Nibiru topic is a hoax, then what are the infrared images of the alleged Nibiru??? And i also heard that NASA saw it with IRAS and reported it and all that.. Why does NASA deny anything about it instead of telling the public so (if Nibiru is in fact a hoax) they dont take drastic measures such as my family was planning on doing. I need more proof that Nibiru is a hoax because the government and NASA are keeping to much from us for us to make full judgement on it. . . .

A: *I really am sorry that you have taken the Nibiru hoax seriously, and that this hoax is causing you and your family distress. This Nibiru stuff is all pure fiction, without any core of fact or truth. Specifically (1) The are no infrared images of Nibiru—period. (2) IRAS (the Infrared Astronomy Satellite, which carried out a sky survey for 10 months in 1983) discovered many infrared sources, but none of them was Nibiru or Planet X or any other objects in the outer solar system. (3) NASA scientists tell the truth. There is no reason why we would not do so, and besides truth-telling is a fundamental value of scientific research. (4) It is unreasonable to ask us to prove that Nibiru is a hoax. Your questions should be to Nibiru proponents to prove to you that what they are saying is true, not for NASA to prove it is false. The burden of proof falls on those who make wild claims. Remember the often-quoted comment from Carl Sagan that extraordinary claims demand extraordinary levels of evidence if they are to be believed.*

Q: I understand that you said nibiru is a hoax but why on this website http://www.detailshere.com/niburu.htm they have live picture of nibiru.

A: *The website you sent me is pretty funny. For example, the statement that the Earth's axis had tilted and the Sun had shifted from its correct place in the sky; anyone with eyes can see this is not true. Or the comment about building observatories at the south pole to observe Nibiru. There is no celestial configuration possible that could be seen only from the Antarctic and not from the whole southern hemisphere. And they ask why no observatories have been built near the North Pole. The last time I looked, the North Pole was in the middle of the Arctic Sea, not exactly the sort of place to build a telescope. I am also bemused by the claims that Nibiru has remained hidden behind the Sun for years. The impossibility of such an orbit has been clear since Johannes Kepler published his first two laws of planetary motions in 1609. Anyway, thanks for a good laugh.*

Q: When most of the planets align in 2012 and planet earth is in the centre of the milky way, what will the effects of this be on planet earth?

A: *There is no planet alignment in 2012 or any other time in the next several decades. As to the Earth being in the center of the Milky Way, I don't know what this phrase means. If you are referring to the Milky Way Galaxy, we are rather far toward the edge of this spiral galaxy, some 30,000 light-years from the center.*

Q: I was wondering what the conclusions were about the possibility of a polar shift, and if that happened what the effects would be to everyday living.

A: *Quite a few people have been asking me about the danger of a polar shift, and I must confess that I don't know what you mean by the term. "Polar shift" seems to have become a buzzword on websites that promote catastrophist ideas and various conspiracy theories, and so this phrase gets passed on from one blog to another without ever being defined. If this means some sudden change in the position of the pole (that is, the rotation axis of the Earth), then that is impossible. There is no point in speculating about the consequences of something that has never happened and never will. Before geologists discovered the role of plate tectonics (about 60 years ago), there was some speculation that a polar shift was involved in transforming the Antarctic from a warm to a cold climate, but now we know it was the Antarctic continent that moved, not the rotation pole. The very small and gradual changes that do take place in the position of the pole are responses of the Earth to changes in the distribution of mass on the surface, for example due to freezing or thawing of glaciers. The bottom line is that there is no possibility of a "polar shift" and no danger associated with one.*

Q: How can you say that a pole shift is impossible? The geological

record shows repeated reversals of the Earth's magnetic field.

A: *Thanks for pointing out an ambiguity concerning the term "pole shift". As I wrote in my previous answer, everything I have seen predicting destruction from an alleged pole shift concerns the rotational pole of the Earth. There is no chance that this rotational pole will shift to a significant degree. The magnetic pole is different; it regularly shifts position by a small amount, and as you note, the polarity of the Earth's magnetic pole reverses roughly once per million years (on average). This magnetic reversal appears to be generated internally and not to be influenced by any outside events. There is no indication that it will happen anytime soon, but more to the point, a magnetic reversal would not cause any of the horrible consequences that you find associated with "pole shift" on the catastrophist Internet sites.*

Q: If the world was going to end would you tell us?

A: *The short answer is "of course I would tell you." Science is about discovering and communicating the truth about nature, not keeping secrets. But on a more basic level, I don't understand questions that ask about a possible end of the world in 2012. This world has been peacefully going its way for 4.5 billion years, with life evolving for probably 4 billion years. Do you really imagine that after 4 billion years it is all going to end 4 years from now? And how could it possibly happen? There is nothing around that could destroy a planet. The worst damage that we could inflict on our ecosystem is probably associated with global warming and loss of habitat, which are already causing a mass extinction, but none of that threatens the future of the planet itself.*

Weirder and Weirder

As I write this in June, questions keep coming in. In addition, nine out of ten of the "most popular" questions and answers on "Ask an Astrobiologist" are about Nibiru, not astrobiology. This experience is baffling on several fronts. While I hope that many people who read my replies are pleased to learn that the world is not about to end, I am surprised at so many angry responses. These come from people who seem to want the world to end in 2012, who are upset to be told that this catastrophe will not happen. I am also struck by their lack of perspective about time or space. For example, my correspondents seem to accept the claim that the magnetic influence of Nibiru is already causing a pole shift even though the object is invisible to astronomers. Some even accept that the tilt is already apparent, or even that the world is "turning upside down." They also accept that we will be in the center of the Milky Way Galaxy, 30,000 light-years away, in 2012. The fact that none of this is being reported in newspapers or on television is simply accepted as evidence of a grand conspiracy. Do they ever ask themselves why governments are pursuing wars in Iraq and Afghanistan, worried about global warming, and conducting an energetic presidential election in the U.S. if they all know the world will end in four years? It has been a revelation to me to glimpse this underworld of conspiracy theories and doomsday predictions.

To conclude on a lighter note, the following recent questions are actually quite amusing:

Q: I have read about the things all about nibiru, and i was completely shocked from this matter, but for many years untill now as i gazed towards the sky during at night, i have noticed a huge star beyond us, I would like to ask is that eris? because the size has dramtically increased over the last couple of years?

Q: Recently there have been a good amount of scary stuff going around in the world. An earthquake and a cyclone. Not only that but it seems that the world is turning upside down.

Q: I am an experimental physicist. I am currently working on anti-gravity technology. I have recieved an infra-red reading of an object travelling into our solar system. This lab does not contain any astrophysicists but we believe this object (around 1.2 times the size of Jupiter) is the new planet Niribu (Planet X). As rumours here have circulated. Its orbit is highly eliptical and will pass into the inner-solar system. I would like to comfirm a couple of things for me. Is this accurate—Our facts are based on rumour, the scan is only a basic, find objects to test on scan. Does this object pose any danger to the Earth? Would any danger occur in a test of experimental technology to deviate the object from its current course? The generator we have created theoretically can move any object of any size, as mass should not affect the fields created.

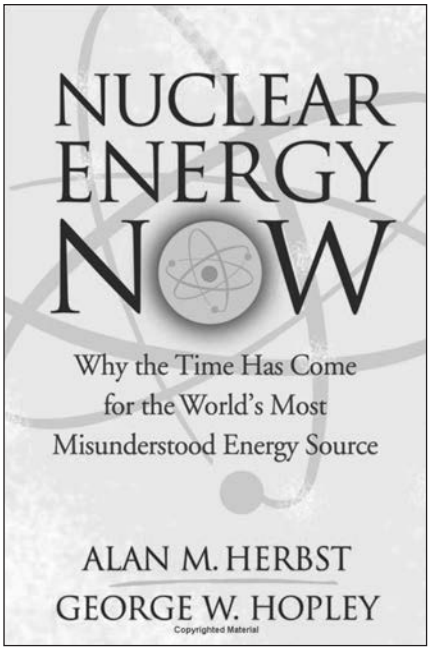
Q: I hear that the beings who are on the Nibiru mother ship which houses smaller ships inside are coming to help the inhabitants of Earth to raise their polarity levels up so the plane would shift up to 4D. Have you heard about this? Please be honest. Theres a lot of information on YouTube that speaks about this. I always knew that another advanced lifeform was here and is working to get us ready for the shift. I would like for one of them to reveal theirselves on TV on CNN. Wouldn't you? □

This experience is baffling on several fronts. While I hope that many people who read my replies are pleased to learn that the world is not about to end, I am surprised at so many angry responses. These come from people who seem to want the world to end in 2012, who are upset to be told that this catastrophe will not happen.

Redoing the Math on Nuclear Energy

KENNETH W. KRAUSE

Nuclear Energy Now: Why the Time Has Come for the World's Most Misunderstood Energy Source. By Alan M. Herbst and George W. Hopley. Totem Books: Cambridge, U.K., 2007. ISBN: 978-0-470-05136-8. 230 pp. Hardcover, $27.95.



The French learned precious lessons in 1956 when Egypt nationalized the Suez Canal, Europe's fossil-fuel lifeline from the Middle East, and again in 1973 when the Arabs imposed a global oil embargo. Through most of the 1970s, France was a net electricity importer. Now, fifty-nine domestic nuclear reactors supply 80 percent of the country's electricity needs, and over the last decade, France has led the world by exporting sixty to seventy billion net kilowatt-hours of electricity every year. With American technology and broad popular support, the French have constructed a safe, standardized, and centrally managed nuclear industry—including international fuel reprocessing facilities—envied the world over.

Globally, nuclear generation capacity has more than tripled since 1980. In addition to the 443 commercial units currently operating, thirty-one reactors are slated for operation by 2013—enough to generate 1,000 megawatts each on average and power thirty-one million U.S. homes. Iran and North Korea plan to build three reactors, and China wants to increase nuclear generating capacity fivefold by spending between $50 and $65 billion on nuclear energy-related construction by 2020. With fourteen reactors in operation and seven under construction, India plans to boost the nuclear share of total electricity supplied from 2.8 percent in 2005 to 25 percent by 2050.

Meanwhile, the world's most rapacious oil consumer, the United States, imports more than 60 percent of its crude oil, most of which originates in OPEC member countries, including Ahmedinijad's Iran, Chavez's Venezuela, Iraq, and of course Saudi Arabia. Although Americans maintain 103 commercial reactors responsible for 10 percent of our total installed capacity and 20 percent of our generated electricity (50 percent of which comes from coal and an additional 20 percent from oil and gas), not a single new facility has been constructed in thirty years.

American nuclear plants are licensed for no longer than forty years, with potential twenty-year extensions subject to approval by the Nuclear Regulatory Commission. The first operating license will expire in 2009, about 10 percent of the total by 2011, and 40 percent more by 2015. Because of alleged security and proliferation concerns, U.S. policy proscribes reprocessing, and thus all spent fuel is treated as high-level waste. Private utilities are therefore responsible for expensive on-site storage until the Yucca Mountain Repository in Nevada, yet to be approved by the NRC, becomes operational (projected for 2010) and receptive (projected for 2017).

At the same time, American energy consumption has increased by an average of 1.9 percent each year since 1995. Between 2005 and 2025, commercial customers will demand 50 percent more power according to the Department of Energy's Information Administration (EIA). Residential requirements will swell by 30 percent and industrial by 16 percent during the same period. Americans can no longer afford to ignore nuclear energy's proven track record and unparalleled potential, say long-

Kenneth W. Krause is contributing science editor for the Humanist *and books editor for* Secular Nation. *He has recently contributed to* Skeptical Inquirer, Free Inquiry, Skeptic, Truth Seeker, Freethought Today, Wisconsin Lawyer, *and* Wisconsin Political Scientist. *Krause may be contacted at krausekc@msn.com.*

time energy consultant Alan Herbst and economist George Hopley in *Nuclear Energy Now*. "If the United States is to remain competitive in the twenty-first century," they warn, "we have no choice but to aggressively construct new nuclear generation assets" (91).

But consider the bottom line. To inspire an investment renaissance, nuclear energy must compete against oil, gas, and especially "king" coal (typically, the cheapest fossil fuel), and win. A new 1,000-megawatt nuclear plant costs from $1.5 to $2 billion and takes five years to build, compared to $1.2 billion and three to four years for a coal facility and $500 million for a combined-cycle gas plant. Indeed, single unit start-up costs appear to favor coal and gas according to a DOE-funded University of Chicago report. But the same study also instructs that nuclear power can meet and beat the competition if companies choose to construct multiple units.

The EIA tracked the average operating expenses for U.S. investor-owned electric utilities from 1993 to 2004, breaking down the costs into three major categories. Operation and maintenance has proven less expensive for nuclear (8.3 mills per kilowatt-hour [kWh] and 5.38 mills/kWh, respectively, in 2004) than for fossil steam generation (2.68 mills/kWh and 2.96 mills/kWh, respectively, in 2004), but operation costs have steadily decreased for nuclear and increased for fossil steam over the twelve-year period. (A mill is equal to .001 U.S. dollars. Fossil steam plants are dominated by coal-fired economics but also include a much smaller proportion of gas- and oil-fired facilities.)

By contrast, fuel expenses overwhelmingly favor the use of nuclear energy (4.58 mills/kWh in 2004) over fossil steam (18.21 mills/kWh in 2004), and such costs have shrunk for the former and expanded for the latter facilities over time. In the final tally, 2004 expenses totaled 18.26 mills/kWh for nuclear power and 23.85 mills/kWh for fossil steam plants. The market consensus, not incidentally, continues to predict both escalating and volatile fossil-fuel prices.

Various external costs are important as well, but they are often a great deal more difficult to isolate and quantify. Long after Chernobyl and Three Mile Island, nuclear waste disposal remains a grave concern, especially in reprocessing-averse political climates. More recently, however, Americans have become increasingly conscious of carbon dioxide's potentially disastrous and irreversible effects on the environment and on life itself. But "when all variables are accounted for," Herbst and Hopley conclude, "nuclear generation is extremely competitive against other fuels and has definite cost advantages in long-term operational costs due to the inexpensive nature of nuclear fuel" (178).

For the general public, however, safety remains the overriding concern—and understandably so. In May of 1986, more than 160,000 persons living within a 30-kilometer radius of the Soviet Union's Chernobyl-4 reactor were evacuated following two core explosions discharging approximately half of the reactor's radioactive iodine and cesium and at least 5 percent of the remaining contaminated material. Forty-seven first responders perished within four months. The World Health Organization estimated that an additional 9,000 people have died or will die of Chernobyl-related cancer. According to the authors, mismanagement, cooling system design flaws, and a blatant disregard for safety at the individual, facility, and societal levels were to blame.

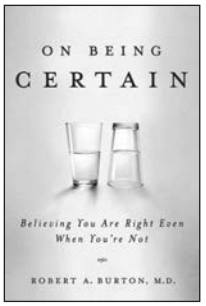
In March of 1979, a combination of mechanical failures and operator errors related particularly to convoluted cooling systems led to a core meltdown at Pennsylvania's Three Mile Island-2 facility. Relatively minor amounts of radiation were leaked, no lives were lost, and the reactor's concrete containment structure performed exactly as designed. Nevertheless, the investigating Kemeny Commission chastised the plant's operators, the entire nuclear industry, and the NRC.

But nuclear utilities and their regulating agencies have learned from these experiences and taken full advantage of the more than twenty intervening years of intense research and development. Leading manufacturers have designed so-called "passive" core and containment cooling systems that emphasize natural, gravity-based circulation in lieu of pumps, fans, diesel engines, and other less reliable mechanisms. Westinghouse, whose licensees own about 50 percent of the world's largest installed base of operational nuclear power plants, boasts of a new reactor line (the AP600s and AP1000s) expected to require 50 percent fewer valves, 80 percent less safety-grade piping, 35 percent fewer pumps, and 70 to 80 percent less control cable. General Electric's next-generation Economic Simplified Boiling Water Reactor will eliminate eleven complete systems and slash plant construction time and operation expenses to boot—again, all due to passive safety technology.

A more recently created venture, UniStar Nuclear, has championed a different but equally intriguing approach. The U.S. European Pressurized Water Reactor uses four separate and redundant safety systems yet requires 47 percent fewer valves, 16 percent fewer pumps, and 50 percent fewer tanks relative to a typical facility. The U.S. EPR is also designed to accommodate recycled fuel, to use 17 percent less uranium per kWh than current light water reactors, and to be 10 percent less expensive to operate than most modern power plants. The question remains as to which of these approaches, passive or redundant, will gain favor in America. But clearly nuclear safety technology has advanced significantly since Three Mile Island, and, as the authors are quick to stress, not one U.S nuclear worker has ever been killed in the plant or as a result of workplace conditions.

The authors do not claim that nuclear fission could ever completely replace America's extensive fossil-fuel and alternative-energy assets. To some significant extent, however, politics and prejudices must soon yield to rational economics, more prudent foreign policy consider-

ations, and common sense. After all, the fission of a single U-235 nucleus will liberate 50 million times more energy than the combustion of a carbon atom, and one pound of uranium stores as much energy potential as about one million gallons of gasoline. Herbst and Hopley might have a point or two. Maybe it's time to redo the math.



We're Wrong More Than We Think

HARRIET HALL

On Being Certain: Believing You Are Right Even When You're Not. By Robert Burton, MD. St. Martin's Press: New York, 2008. ISBN: 978-0312359201. 272 pp. Hardcover, $24.95.

Neurologist Robert A. Burton has written a gem of a book, *On Being Certain: Believing You Are Right Even When You're Not.* His thesis is that "Certainty and similar states of 'knowing what we know' arise out of involuntary brain mechanisms that, like love or anger, function independently of reason." Your certainty that you are right has nothing to do with how right you are.

Within twenty-four hours of the *Challenger* explosion, psychologist Ulric Neisser asked 106 students to write down how they'd heard about the disaster, where they were, what they were doing at the time, etc. Two-and-a-half years later he asked them the same questions. Twenty-five percent of the students gave strikingly different accounts, more than half were significantly different, and only 10 percent recorded all of the details correctly. Even after rereading their original accounts, most of them were confident that their false memories were true. One student commented, "That's my handwriting, but that's not what happened."

Just as we may "know" things that clearly aren't true, we also may think we don't know something when we really do. In the phenomenon of blindsight, patients with damaged visual cortexes have no awareness of vision but can reliably point to where a light flashes when they think they are just guessing. And there are states of "knowing" that don't correspond to any specific knowledge: mystical or religious experiences.

A "feeling of knowing" probably had an evolutionary advantage. If we are certain, we can act on that certainty rather than hesitating like Hamlet. Certainty makes us feel good: it rewards learning and keeps us from wasting time thinking too much, but it impairs flexibility.

Richard Feynman said

> I can live with doubt and uncertainty and not knowing. I have approximate answers and possible beliefs and different degrees of certainty about different things. . . . It doesn't frighten me.

On the other hand, many people, including religious fundamentalists, can't deal with uncertainty. They demand absolute answers and cling to certainties even in the face of contrary evidence. Why are people so different in their need for certainty? We know there is a gene associated with risk-taking and novelty-seeking. Burton makes an intriguing suggestion: could genetic differences cause individuals to experience different degrees of pleasure derived from the feeling of knowing?

There is a "hidden layer" in our brain in which neurons are influenced by genetics, personal experience, hormones, and chemistry. These factors influence all our thought processes without our conscious knowledge. We would like to think that if everyone had the same information they would necessarily reach the same conclusion, but that just isn't so. There is no such thing as pure reason. "Reason is not disembodied, as the tradition has largely held, but arises from the nature of our brains, bodies, and bodily experiences," says Burton.

The autonomous rational mind is a myth. The concepts of the self and free will are innate, useful fictions that allow us to function. As Samuel Johnson said, "All theory is against the freedom of the will; all experience is for it." Modern neurophysiology tells us our decisions are made subconsciously before we are aware of deciding.

Burton discusses how certainty interferes with science. "Integrative medicine" guru Andrew Weil set up tests of osteopathic manipulation for ear infections, and when the experiments showed no effect, he said, "I'm sure there's an effect there. We couldn't capture it in the way we set up the experiment." This kind of thinking is rampant in alternative medicine. Burton thinks that if Dr. Weil recommends osteopathy for an ear infection, he should inform the patient that the recommendation is based on an unconfirmed belief.

Richard Dawkins rejects religion but finds purpose and meaning in science. Burton suggests that purpose and meaning are powerful innate feelings. We feel that our life has purpose and meaning, and we look to science or religion to try to explain that feeling. No amount of rational argument is likely to change us. "Whether an idea originates in a *feeling of faith* or appears to be the result of pure reason, it arises out of a personal hidden layer that we can neither see nor control," writes Burton.

Burton thinks irrational beliefs can have adaptive benefits (for instance, the placebo effect) and thinks objectivity and reason should be seen in the larger context of our biological needs and constraints. If science and religion could both accept

Harriet Hall is a retired physician who writes frequently about alternative medicine and pseudoscience. She is a SKEPTICAL INQUIRER *contributing editor and author of* Women Aren't Supposed to Fly: The Memoirs of a Female Flight Surgeon.

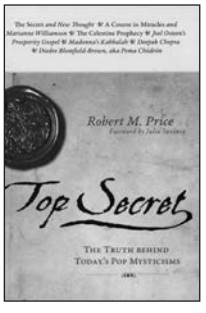
that all our facts are really provisional, absolutism could be dethroned, and a dialogue might become possible. What if religious fundamentalists acknowledged even a 0.0000000001 percent possibility that their beliefs are false? Biology teaches us that absolutism is an untenable stance of ignorance.

I have long thought that absolutism was one of humanity's greatest problems. The insights from this book can be applied to every human interaction from marital squabbles to terrorism. There are implications for politics, religion, and every sphere of human activity. It may be frightening to recognize the limits of our knowledge and will be hard for some to give up their cherished certainties, but Burton says he has gained an extraordinary sense of inner quiet born of acknowledging his limitations.

As a reminder that there is never a 100 percent guarantee that we are right, Burton suggests we use the words "I believe" instead of "I know." This is one instance where I disagree with him: I don't like either word. Belief sounds too much like faith. I don't like the idea of saying I believe evolution is true. Truth in science, at best, can only mean that the evidence is overwhelming. We can't "know" absolutely in a metaphysical sense. We *provisionally* accept evolution because the evidence is so overwhelming that it would be perverse to reject it. We remain open to new evidence.

Burton is a neurologist who is also a novelist and a columnist for Salon.com. This well-written book is the result of many years of cogitation by a wise clinician. He supports his arguments with tales of neurology patients, recent research into brain function, and examples of how our senses constantly fool us.

If there's anything you think you're certain of, read this book and you may change your mind.



Exposing Popular 'Let's Pretend' Fantasies

WILLIAM HARWOOD

Top Secret: The Truth Behind Today's Pop Mysticisms. By Robert M. Price. Prometheus Books, Amherst, New York, 2008. ISBN 978-1-59102-608-2. 370 pp. Hardcover, $24.95.

When Immanuel Velikovsky tried to pass off religion as science by writing an allegedly nonfiction fairy tale in which the planet Venus became a comet that, in shooting past Earth, caused the sun to stand still for Joshua and manna-bread to fall from the sky out of the comet's tail (confusing hydrocarbons with carbohydrates), scientists were so repulsed by such scientific illiteracy that they refused to dignify Velikovsky's inane drivel by offering a rebuttal. That was a mistake, and the gullible ignoranti imagined that Velikovsky could not be rebutted because he was right. Carl Sagan recognized the problem and wrote a long overdue rebuttal that blew Velikovsky's prototype scientology out of the water.

Since then, Velikovsky-type fantasies have been promulgated by Maharishi Mahesh Yogi, Deepak Chopra, Oprah Winfrey's pet nonsense peddler Rhonda Byrne, and several others whose names I encountered for the first time in this book. Learning from the Velikovsky farce, Robert Price, a member of the Jesus Seminar and author of *Deconstructing Jesus*, *Jesus is Dead*, and *The Incredible Shrinking Son of Man*, has now taken upon himself the onerous task of rebutting the current set of mushroom fantasies for which the term "pseudoscience" may be too generous.

Rhonda Byrne wrote in *The Secret* (quoted on p. 26), "I never studied science or physics at school, and yet when I read complex books on quantum physics I understood them perfectly."

"This is why we don't allow students to grade their own papers," Price writes. "If Rhonda Byrne really believes that Einstein taught [Byrne's fantasy], one might suggest that she take another look at those physics books, maybe starting with *Quantum Physics for Dummies*."

Of one of the better known paranormal fantasizers, Price writes: "[Deepak] Chopra and his fellow travelers are doing nothing essentially different from the tactics of Scientific Creationists and Intelligent Design advocates who seek to translate religious dogma derived from scripture into cosmetic, seemingly 'scientific' terms so as to smuggle dogma into science classes" (51). Chopra also emulated Maharishi Mahesh Yogi in claiming to have levitated eight feet off the ground and to have walked through walls.

"I'm sorry, but one simply cannot credit such claims. . . . This is just medicine-show imposture" (50). Chopra's status as a conscienceless humbug is demonstrated by the fact that "he once told a seeker that her cancer had evaporated, only to have her die from it soon afterward" (50).

James Redfield's "didactic, barely fictive, novel *The Celestine Prophecy*," Price writes, is "Like a porn movie, the narrative is just itching to get from one juicy scene . . . to another. . . . What is remarkable is that, with a book featuring so little in the way of a story, it is nonetheless so bad. The wide and avid readership of the book is either very forgiving or completely

William Harwood is a contributing editor of American Rationalist. *He is the author of* Mythology's Last Gods: Yahweh and Jesus *and editor/translator of* The Fully Translated Bible. *His most recent book is* American Hitler: George W. ShicklBush and the Republicanazi Gestapo.

oblivious" (195). He compares *The Celestine Prophecy* to H.P. Lovecraft's purely imaginary *Necronomicon*, which "even today many are convinced . . . exists," and Joseph Smith's *Book of Mormon*.

"Smith composed a plausibly ancient-sounding text and extended the fiction so far as to claim publicly that the Book of Mormon actually was an ancient book he had discovered" (198). I am not about to accuse Price of being unaware that the Book of Mormon was plagiarized from an unpublished historical novel by Solomon Spaulding. Presumably he considered that reality irrelevant to the point he was making.

The neo-Jewish Kabbalah has won a large number of Western adherents, probably for the same reason that neo-Buddhism has done so—recognition that traditional religion is indefensible combined with the lack of moral courage to go public as a nontheist. Price states that Kabbalah rabbi Michael Berg, author of *The Way*, "gives us a charter for feeling guilty about events to which we have contributed nothing. . . . I have myself to blame for the deaths of the Kennedys and Dr. King. We all do! (And to think Madonna renounced guilt-tripping Catholicism for this?)" (257).

In his chapters on cults, Price comes close to endorsing Max Weber's breakdown of belief systems into religions, sects, and cults, defining a cult as an organization with a single charismatic leader whose followers believe that he is divine or in touch with the divine (299). Price accordingly identifies Mormonism as a cult (305), along with the Moonies, Scientologists, Heaven's Gate, and "other Flying Saucer Religions" (301). But despite its accordance with the same definition, he does not identify the Roman Catholic Church as a cult. Go figure. Perhaps he is unwilling to challenge the most widespread definition of a cult as any religion smaller than one's own?

Did the "let's pretend" kindergarten fantasies Price targets really need rebutting? As a Canadian, I would be tempted to answer no, since other than the Maharishi and Mormon polygamy cults, the peculiarly American delusions discussed have not significantly infiltrated a country that a large minority of Americans could not locate on a map. But in a country in which a Mormon and a Creationist could have won Republican primaries for president of the United States, such delusions represent a clear and present danger. Price has performed a public service comparable with Sagan's annihilation of Velikovsky, Jon Atack's demolition of the fraudulence of Scientology, and ing a door into the unknown—a volume of an evening of entertaining reading.

Entertainment he will get, as will all readers of Joe Nickell's latest book, *Adventures in Paranormal Investigation,* taken largely from his "Investigative Files" columns from SKEPTICAL INQUIRER. At no extra charge, the reader will also be imparted with knowledge leading to the realization that when the hard light of reality shines on these mysterious phenomena, they tend to dissipate like the fog on the cover.

Readers of this magazine need no introduction to Joe Nickell, who has devoted much of his life to the critical examination of strange reports and folklore. Perhaps the title and cover, however, will attract a larger audience who will discover a witty and absorbing private eye who has attempted to walk the fine line between critical inquiry and mere "debunking" (which is, as he points out, an *a priori* assumption that paranormal claims are not real and need disproving). Nickell approaches all such claims with gusto and an open mind.

It must be hard to maintain that attitude. Crop circles, ghostly hitchhikers, and weeping icons (to name but a paltry few) surely have gone beyond the need for serious examination into the realm of the merely kooky. Don't we have more urgent mysteries that need answering? Aren't these smaller and more ridiculous claims what Daniel Loxton, in a recent *Skeptical Briefs* article, called "unsinkable rubber ducks"?

Yes to both questions. But we can all be thankful that someone like Nickell is still out there plugging away at the myriad paranormal claims, some silly and some downright absurd, that saturate our human cultures. Given their ubiquity and the harm that can come from a habit of uncritical thinking, "somebody has to do it," as Loxton said.

Nickell points out that his main challenge is in deciding which claims to investigate, especially those originating with "one puzzled person" or perhaps an "attention-seeking hoaxer." A good guide should be the popularity of the purported phenomenon. Sure, Peter Popoff's seeming gift for clairvoyance was exposed as fake years ago, but his act (via a receiver hidden in his ear) fleeced people out of millions of dollars and deserved the special attention that

From Weeping Icons to Crop Circles: Investigating with Gusto

TERRY SMILJANICH

Adventures in Paranormal Investigation. By Joe Nickell. The University Press of Kentucky, Lexington, 2007.
ISBN: 978-0-8131-2467-4. 292 pp. Hardcover, $29.95.

Browsing through a bookstore, someone comes across a cover featuring an eerie illustration of a boy open-

Terry Smiljanich has been chairman of the Tampa Bay Skeptics for over fifteen years and is a trial attorney in Tampa, Florida.

about "adventures in paranormal investigation." Inside are chapters on spirit writing, stigmata, crystal skulls, Satan, ghost towns, UFOs, lake monsters, and even Frankenstein. Drawn in by the discussion of stranger things than are dreamt of in his philosophy, he buys the book in the hopes

James Randi's exposure gave it. And now that he's back, Popoff is indeed deserving of even more than this Nickell's worth of scrutiny.

Besides, it's such fun! We armchair skeptics can sit back and watch a master at work. Some may look upon Nickell as a professional "wet blanket" telling people that their cool sightings or weird experiences were likely more human than supernatural. But who can resist lively accounts of examining an "alien" hand, a haunted gas chamber, ships of the dead, or fortune-telling birds?

Nickell is unfailingly thorough in his approach to investigations. Looking into the healing properties of a spa? The reader gets a short history of health spas, from ancient Greece to Aztec culture and on to medieval practices in a resort named Spa in Belgium. Interested in haunted castles? How about a history of Burg Frankenstein or Blarney Castle? And where else will you get a discussion of the possibility that the word "baloney" derives from "blarney" and the difference between the two? Quoting Fulton J. Sheen, Nickell explains that "baloney is flattery so thick it cannot be true, and blarney is flattery so thin we like it."

The author turns briefly to personal issues as well. He discusses the joy of learning that he was the father of a previously unknown daughter and is curious about the "intuition" that had led her to first question her parentage while in her thirties. He gathers information about her upbringing and discovers several clues that came her way that could have led her to half suspect that her father was not who she had been told all along. Intuition is a powerful feeling that can be based on many such subtle hints "assembled unconsciously," and when it turns out to be right, intuition can seem almost paranormal. As Nickell rightly cautions, it is not a consistently reliable indicator of the truth. It did, however, lead him to a new daughter and two grandsons.

There are, of course, serious issues mixed in with the fun. While some benign fortune-tellers may merely sell harmless optimism ("You will come into some money"), hucksters who "talk to the dead" generally prey upon the grief of others merely to line their own pockets. Psychic detectives cater to the credulous and waste the time of legitimate law enforcement. One shot at Randi's million-dollar challenge would expose them all, so they wisely avoid skeptics. And a special place in the inner circle of shame and approbation must be reserved for psychic healers who exploit fear, detract from sound medical attention, and provide cruelly false hope.

For all of these reasons, someone like Joe Nickell is priceless. If that person who was attracted to the mysterious cover and tantalizing title discovers that testimonials and breathless eyewitness accounts are unreliable and that it can actually be more fun to exercise one's critical-thinking faculties than to indulge in mere fantasy, then the reader will see that the door on the cover indeed opens into the sunlight. □

NEW BOOKS

Listing does not preclude future review.

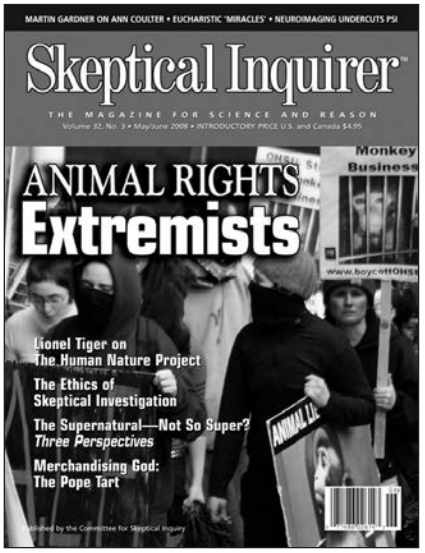
THE DRUNKARD'S WALK: How Randomness Rules Our Lives. Leonard Mlodinow. Pantheon Books, New York, 2008. 272 pp. Hardcover, $24.95. A physicist who teaches about randomness to Caltech students (and once wrote for *Star Trek: The Next Generation*) provides a lively excursion into a topic that continually fools us. So much about randomness and probabililty is counterintuitive; it is one of the most difficult intellectual concepts to understand. In one instance, a medical diagnosis using the numerical information doctors usually supply seems at first to have a one in 1,000 chance of being wrong; yet once the incidence of the disease is stated, we find there are 10 out of 11 chances the diagnosis is wrong. Mlodinow, who worked with Stephen Hawking on *A Briefer History of Time,* offers sections on the dueling laws of large and small numbers, false positives and positive fallacies, measurement and the law of errors, the order in chaos, and illusions of patterns and patterns of illusion. He includes many anecdotes and stories of some of the wild characters who contributed to the study of probability. An irreverent look at how randomness influences our lives and how difficult it may be to recognize.

HUMAN: The Science Behind What Makes Us Unique. Michael S. Gazzaniga. Ecco/Harper Collins, 2008. 447 pp. Hardcover, $27.50. One of the world's leading neuroscientists and a pioneer in cognitive research who believes science should deal with big questions considers one of the biggest: what makes us human? We humans *are* special, he says. While most human activity has antecedents in the animal world, "to be swept away by such a fact is to miss the point of the human experience," he argues. He combs through data about our brains, our minds, our social world, our feelings, our artistic endeavors, our consciousness, and more. He concludes that although we are made up of the same chemicals, with the same physiological reactions, we are nevertheless very different from other animals. We have different brains, different needs for social groups, and different mental skills and moral impulses. These, and more differences as well, together make us unique.

REBEL GIANTS: The Revolutionary Lives of Abraham Lincoln and Charles Darwin. David R. Contosta. Prometheus Books, Amherst, New York. 365 pp. Hardcover, $26.95. Lincoln and Darwin were born the same day (February 12, 1809). A history professor long interested in both men shows how, although born into very different families and economic circumstances, they were formed by many of the same influences and shaped their worlds more than any other two individuals of their time. They had many qualities in common, says Contosta: difficulties in childhood, burning ambitions, a willingness to postpone decisions about career and to reject the familiar notions of their age, a superb sense of timing, and dogged determination. Both suffered from melancholia or depression, but both maintained a will to live by throwing themselves into their work, which changed the world. Contosta argues that studying the similarities (and differences) between these two great men can lead to understanding each man better than studying them separately.

THINK SMART, ACT SMART: Avoiding the Business Mistakes That Even Intelligent People Make. Jim Nightingale. Wiley, Hoboken, New Jersey, 2008. 151 pp. Hardcover, $27.95. Smart people sometimes make mistakes that seem like good ideas at the time. Why do clearly intelligent people sometimes make spectacularly wrong decisions? Nightingale, a business consultant, shows how every kind of erroneous thinking is rooted in similar thought processes. He uses case studies from much of recent history: The Challenger disaster, Saddam Hussein, financial euphoria, the failed Bay of Pigs invasion, Project Alpha, the Dot-com crash, Sir Arthur Conan Doyle and the Cottingly Fairies, business myths, the myth of the end of the world, and more. His goal is to show how to make smart decisions by avoiding the pitfalls into which even the smartest of us fall.

—Kendrick Frazier □


MARTIN GARDNER ON ANN COULTER • EUCHARISTIC 'MIRACLES' • NEUROIMAGING UNDERCUTS PSI
Skeptical Inquirer
THE MAGAZINE FOR SCIENCE AND REASON
ANIMAL RIGHTS
Extremists
Monkey Business
Lionel Tiger on The Human Nature Project
The Ethics of Skeptical Investigation
The Supernatural—Not So Super? Three Perspectives
Merchandising God: The Pope Tart

Animal Rights Extremists

P. Michael Conn and James V. Parker do a fine job highlighting the extreme actions of certain segments of the animal rights movement, as well as point out some of the benefits of animal research ("Warning: Animal Extremists Are Dangerous to Your Health," SI, May/June 2008).

However, they fail to offer a compelling argument in support of animal research itself, particularly with nonhuman primates. The authors state that "it is our duty as humans and ethical researchers to care for [the animals] humanely, just as we care for our pets." But this statement seems to overlook the fact that most people who care for their pets don't do medical research on them.

The authors point out (rightly, I think) the connection between rights and responsibilities to make their case that animals do not have rights. But in following this line of reasoning, it could be argued that humans with severe mental retardation do not have rights either, because they do not possess the faculties necessary for having responsibilities.

The question that needs to be answered (at least in principle) is what are the morally significant differences between nonhuman primates and severely mentally retarded humans such that it's morally permissible to use one group as research subjects but not the other?

Charles Sullivan
Author and Philosopher
Portland, Oregon

I do not advocate the violence of extremists of any kind. However, humans are not perfect, even scientists. Having been a neuroscience senior lab tech for several years, I saw scientists try their best to abide by laws and humane situations; yet "shit happens," and the nonhuman animals are the ones that are negatively affected. I am also aware of a lot of areas in which the number of animals used for research could be greatly reduced; yet the authors never touched on this. As a science instructor I am gravely disappointed that SKEPTICAL INQUIRER did not analyze the topic more seriously.

First, researchers and the animal rights extremists both seem to be functioning from different "discount rates" for species to the point that ideology conquers all. The animal rightists: helping those that cannot speak for themselves against the controlling human species. The researchers: doing research "for the good of mankind." Yet neither are selfless martyrs. Second, avoiding big ideas lends itself to the elimination of skepticism. What happened to equipoise, fidelity, and compassion? The omissions in "Warning . . ." reek of bias which should go against SKEPTICAL INQUIRER's goal of supposed objectivity.

Name and address withheld by request

I work in the intake office of an open admissions shelter that will accept every animal that comes through the door but is forced to euthanize many animals based on factors including behavior, health, and limited shelter resources. We contend daily with people who, upon being told that bringing their pet to us doesn't guarantee it a new home, accuse us of being heartless killers.

While I do not condone the divisiveness and vigilantism sometimes used by groups such as PETA, it was unfair of the authors to piggyback their use of euthanasia on their disapproval of PETA's militant advocacy tactics and unwillingness to support animal testing. Looking over the 2007 report submitted to the Virginia Department of Agriculture and Consumer Services, I cannot account for why their *euthanasia* rate is so high, but I also couldn't find a statistic for animals PETA "killed," a semantic trick used to further vilify the organization.

Unlike many of the topics covered in your magazine (which I have enjoyed reading for years), I am familiar enough with animal welfare to spot suspicious use of argument. It was helpful to be reminded that I cannot let my skeptical guard down . . . even while reading a magazine about skepticism.

Lindsay Hammond
uumellmahaye@gmail.com

I for one am highly skeptical of the "strict federal standards" for animal research mentioned in your editorial and in the article by Conn and Parker.

Why? 1. I'm a retired federal public servant myself; 2. The book *Next of Kin* by Roger Fouts and Stephen Tukel Mills (introduction by Jane Goodall) mentions a visit in March 1987 that Goodall and Fouts made to a federally funded laboratory near Washington, D.C., that conducted research on live chimpanzees. There they found chimpanzees being housed in isolettes that they considered much too small, with the animals in obvious distress.

On the trip back to Washington, one of the officials said to Goodall that he was sure she "would have no problem writing a letter stating that this lab is up to USDA regulations and that there are no violations."

Goodall, with tears pouring down her face, composed herself and said very slowly and deliberately, "By no means will I write you any such letter."

While I do not condone violence and terrorist tactics in support of anything, I do feel that we fall down very seriously in our treatment of animals. While I support proper scientific research involving animals, I strongly oppose any kind of inhumane treatment.

Simply citing "strict federal standards" does not give me any confidence that the animals concerned are receiving humane treatment.

William Broderick
Belleville, Ontario, Canada

I'm really disappointed to see six pages of the May/June issue devoted to a public relations piece reminiscent of George Orwell's story *Animal Farm*—"Animal Rights Bad, Animal Research Good." Life is rarely so simple.

The authors reduced the concept of animal rights to an unsupported, unexamined premise: animals possess no inalienable rights because they are unable to take responsibility for their actions. Now there's a topic worthy of scholarly conversation. But rather than take the high road and explore their premise, the authors jumped right into the violence of "animal extremists" and the life-saving, mom-and-apple-pie efforts of researchers to improve the lot of humans. The Judeo-Christian concept of the supremacy of man and his God-given duty to subjugate the earth was accepted as a given, and the focus quickly shifted to black hats vs. white hats.

Bernie Hourihan
Studio City, California

I found your article and editorial on animal rights nasty and misleading. It's simply wrong to link PETA with a tiny group of violent extremists. You might publish an article on the polluting effects of meat production rather than attack people who are against cruelty to animals.

George Goldberg
Toronto, Ontario, Canada

I have just finished reading "Warning: Animal Extremists are Dangerous to Your Health," and I found myself wondering *why* I would read such an article in SI. Though I support humane research, I have to say this article read very much like a six-page advertisement for the animal research industry, especially when you look at the sidebars and charts.

What about this subject makes it appropriate for publication in this magazine? I did not read about outlandish scientific or occult claims from animal rightists nor can I say I have ever heard any such claims. We can debate animal rights verses animal welfare in many forums; why was it deemed suitable to publish a pro-research treatise here? Can someone please 'splain it to me?

Deborah Cottrell, DVM
West End Animal Hospital
Newberry, Florida

The Editor responds:

SI has consistently defended science and scientists against anti-science attacks from every quarter imaginable—creationists, New Agers, postmodernists, paranormalists, pseudoscientists, and so on. We also criticize and expose working scientists who do bogus research or otherwise violate research standards. The kind of extremism described in the article is a direct attack on scientists and scientific research and goes far beyond civil intellectual argument to illegal acts of terrorism. That is a concern for both the scientific community and the community of skeptical inquirers, of which there is considerable overlap.

—Kendrick Frazier, Editor

Nothing warms the black heart of your average terrorist more than having their acts of terror extolled and their agenda given page space in a respected publication. Also, how validating is it to a terrorist to open a magazine, which is dedicated to reason, and read words designed to nurture terror in the reader, aping the way terrorists themselves use the written word?

The SKEPTICAL INQUIRER, to a small but by no means alarming (just a bit disturbing) degree, accommodated both these emotions by publishing Conn and Parker's article.

As expected, the authors make it perfectly clear that they are appalled and disgusted by the tactics of animal rights extremists. And advocates of the authors' point of view (myself included) are treated to the usual cleansing deluge of rational dialogue and factual reporting about biomedical research that readers come to expect from articles in the SKEPTICAL INQUIRER.

However, the authors miss the mark mightily I think. First, any terrorist reading this article would immediately clip it out and paste it in a position of honor in their little terrorist scrap book. What animal rights extremist could resist an article that, in effect, documents how effective their tactics have proven to be?

I understand that the authors and their colleagues have themselves been bullied by terrorists, and it's only human to want to spread the fear around a little. However, if its all the same to the authors, I don't need to be terrorized into being concerned about terrorism. All I need to make enlightened decisions about animal rights extremists verses the need for continuing biomedical research are the facts. The hope that biomedical research brings to the table makes the case a thousand-fold over any fear that I might have about animal rights extremists.

Michael Hinckle
mhinckle1@wi.rr.com

Authors James V. Parker and P. Michael Conn respond:

Each of the correspondents wishes that we had addressed some other aspect of the complex issue of animal research/animal rights than that of terrorism. To please everyone, we would have had to write a book. As a matter of fact, that is what we have done, not in the pages of the SKEPTICAL INQUIRER but in The Animal Research War *(Palgrave Macmillan, May 2008).*

Mr. Sullivan and Ms. Hourihan would like us to engage in philosophy and theology. Sullivan, following animal rights philosopher Tom Regan, likens animals to those humans who lack autonomy—infants, the comatose, the senile, the profoundly impaired of mind. Taking the side of several other philosophers—Mary Ann Warren, James Lindemann, Nelson and Martha Nussbaum—we argue in our book that so-called "marginal humans" and animals are not equivalent, and that the difference between them suggests not a recognition of the rights of animals but a careful attention to their various species-specific welfares.

We have no interest in defending interpretations of the Bible that promote what Ms. Hourihan calls "the Judeo-Christian concept of the supremacy of man and his God-given duty to subjugate the earth." In fact, we prefer to take our stand with the World Council of Churches that has pointed out that Biblical texts provide no justification for domination and subjection and has repented for the harm done to God's creation through churches' misinterpretation of the Hebrew and Christian Scriptures.

Mr. Broderick and the writer whose name is withheld have little confidence in the power of federal regulation to prevent animal abuse in laboratories. In one sense, we agree: laws are powerless to make people good and even limited in their ability to guarantee law-abiding behavior. They can, however, instruct us in what is morally right and hold us legally accountable to standards. Such standards, like those for highway safety or earthquake preparedness, are constantly being improved as new knowledge and technology and more funds for inspectors and inspections allow.

We would hope that the unnamed critic, who asserts that she is aware of lots of areas in which the number of research animals could be greatly reduced, brings up the problem with colleagues and supervisors and takes her concerns to the Institutional Animal Care and Use Committee where she works.

Lindsay Hammond takes offense at our using the words "euthanasia" and "killing" interchangeably. Had we employed only the former, our point would remain the same: the Virginia Beach SPCA, right down the road from PETA's Norfolk headquarters, managed to adopt out almost 70 percent of the animals in its care last year—and it did so on something of a shoestring budget.

Mr. Goldberg is unhappy that we "link PETA with a tiny group of violent extremists." It is PETA that has sometimes linked itself with extremists; we merely report that fact, well-documented, in our book.

Why, Ms. Cottrell asks, would SI publish an article that contains no analyses of "outlandish scientific or occult claims?" We believe that she will find cases and critiques of outlandish science aplenty—that the eradication of polio or the development of antibiotics, for example, didn't depend on animal research—in the assertions of animal activists reported in our book.

Mr. Hinkle notes, correctly, that "the hope that biomedical research brings to the table makes the case a thousand-fold over any fear . . . about animal rights extremists." That hope, outlined minimally in the article's sidebar on "Medical Benefits of Animal Research," is front and center in The Animal Research War.

The Human Nature Project

Kudos to Lionel Tiger for providing an updated

version of the nature/nurture paradigm and for arguing on behalf of the unity of social and natural sciences ("The Human Nature Project," SI, May/June 2008). Yet several notions warrant comment. Referring to the work of B.F. Skinner, Tiger says, "The experimenters woke up mice and then made them do what they do anyway at night amid pipes—run mazes." In fact, Skinner built electrically programmed relay equipment in which the behavior of rats (and later pigeons) was shaped to operate levers under complex schedules of positive reinforcement ("A Case History of the Scientific Method," *American Psychologist*, 1957)—hardly typical of rat behavior in the "natural" environment. As such, Skinner demonstrated a methodological confluence between behavioral and biological sciences by designing experimental studies of behavior within the lab under controlled conditions.

Moreover, "sensory deprivation" studies of the 1950s–60s at McGill (D.O. Hebb, *A Textbook of Psychology*, 1958) discussed how much deficit in human behavior can occur with only short-term reduction of patterned stimulation. Yet the statement by Tiger, "Our internal nature is obviously more mysterious, more personal, more intricately connected to foggy fears and orchestral dreams," seems a renaissance of Freudian fantasy.

Neither the content of Pinker's 2002 book *The Blank Slate: The Modern Denial of Human Nature* nor the current article provides an operational definition of "human nature." Perhaps Professor Tiger will provide such a definition in the future.

William Vitulli, PhD
Professor Emeritus of
Psychology
University of South Alabama
Mobile, Alabama

Merchandizing God

I truly appreciate Karen Stollznow's article "Merchandising God: The Pope Tart" (SI, May/June 2008) for both its hilarity and seriousness. It's a shame she did not carry her research further and ask "Why do Catholics see Jesus on a tortilla, but Muslims don't see Allah on an apple and Jews don't see Moses on a munchkin?"

Fred Reiss
Temecula, California

"Merchandising God: The Pope Tart" shows the ridiculous and outrageous things that people do to market their beliefs to other people. What is sad is that there are many people who fall for the "I saw Jesus in my bowl of Cheerios" gag. I am surprised to see people trying to sell items on eBay that they believe have images of biblical figures. My son showed me where someone was trying to sell a stained white sock allegedly with the image of the Virgin Mary. Someone out there will actually buy this dirty sock for an incredible price.

I met a woman not too long ago who sees faces in all kinds of reflections. She will take pictures around her home and point out a reflection. She claims to see the face of her deceased boyfriend. When she shows me the picture and asks my opinion, I merely say I don't see anything, and she gets very upset. Like Jim Morrison of the Doors says, "people are strange."

Paul Dale Roberts
Elk Grove, California

While eating my breakfast of Honey Bunches of Oats this morning I noticed that one of the flakes looked just like one of Jesus's toenails. I was fascinated by this revelation and thought about going to my computer and selling it on eBay. I figured I may get enough money for another box of Honey Bunches of Oats. But I thought, "What the hey, I'm hungry." So, I ate it.

I'm sure that there are a lot of Christians who would have chastised me for doing such a mundane act. After all, as far as the Church is concerned it could have been an "article of faith" just like the Shroud. Even after the Church said it was a fraud people still flock to see the image. Maybe I should have held on to my Jesus toenail flake. I could have charged admission. It ended up where it should be. Surprisingly, in Proverb 14:15, "The simple-minded will believe anything. . . ." There is an ancient Latin proverb that states, "The vulgar (common folk) love to be deceived—deceived let them be."

Alexander S. Holub
Los Angeles, California

Karen Stollznow got $46 for her Pope Tart. Now that she has a new business, I wonder if she could offer some advice. Should a religious entrepreneur keep "finding" religious icons in cinnamon buns and road signs to sell on eBay or is there more money in selling prayer handkerchiefs? Or how about starting a televangelist program where for a thousand dollars a pop, a person can send in a prayer request so a bunch of preachers can stand over a huge pile of similar letters and wave their hands for God to answer? I hope Stollznow can answer. Time is short and she's sitting on a gold mine here.

Don Dillahay
Atco, New Jersey

Karen Stollznow responds:

Why only traffic in relics or televangelism? These are all interrelated and a mere part of my soon-to-be ecumenical empire!

Ethics of Skepticism

I found Martin Bridgstock's attempt to build a foundation for skeptical ethics ("Skeptical Ethics—What Should We Investigate," SI, May/June 2008) necessary but not sufficient. Lionel Tiger's discussion of human nature (in the same issue) actually seems more germane. We could build our ethics on the basis of human needs (pp. 33–34), such as the need of immature humans for protection.

I have two major concerns with suggesting that our ethics should rely on prioritizing the dangerousness of paranormal beliefs. First, *any* belief in a "supernatural" being can potentially lead to extremely dangerous behavior, and we already know that proscribing God in any way is doomed to failure. The examples of dangerous beliefs provided by Bridgstock—alternative medicine and psychic counseling—seem relatively trivial compared to, for example, suicide bombings and the war on science, which are based on a belief in God and frighteningly widespread. Second, after we set up our enlightened code of ethics, then what do we do? People with paranormal beliefs of almost any kind are almost sure to reject our code. The more we insist, in fact, the more they will cling.

So we are essentially back where we started: a great set of noble ethical principles matched against a huge set of unshakable dangerous beliefs. In other words, I do not see this approach as very promising.

Paul E. Munsell
Guatemala
munsell@intelnet.net.gt

Martin Bridgstock's article on skeptical ethics was well thought-out in many ways. Using the philosophy of consequentialism (which I agree provides a sound basis for determining the focus of skeptics' efforts), he suggests that "the most skeptical attention should be devoted to those paranormal claims which are regarded as the most dangerous" and gives two categories of the consequences of such beliefs. Given this

basis, I would argue that the most dangerous paranormal claim, by far, is that of religion, broadly defined, which belongs in his first category, those claims that cause "disaster and the suffering of innocent people."

Bridgstock gives two candidates, alternative medicine and psychic counseling. These, although resulting in widespread suffering and even death, pale next to the suffering and death caused by conflicts over religion. Wars based wholly or in part on religion are too numerous to recount, with innumerable examples from the Bible, continuing through the Crusades, Catholics vs. Protestants in Europe, and the Holocaust to those ongoing worldwide today. Today religious conflicts kill and displace millions annually and cause unimaginable suffering to many more. In addition, consider the suffering and death caused by religiously motivated opposition to stem cell research and to the use of condoms and other preventive measures to reduce the spread of HIV and other STDs.

His second category is those claims "most likely to endanger a general understanding of science and logical methods of reasoning." He mentions the creationist movement, which is explicitly driven by religious beliefs. The millions in this country who want to eliminate evolution from our schools and attack science are motivated not by a belief in astrology or channeling but by their religion. This is true worldwide, with Islam and Christianity the strongest anti-science forces operating today.

Religion is usually given a bye in these discussions, but if skeptics are going to work toward alleviating suffering and anti-science efforts, why not include the biggest perpetrator of these?

Wesley Sutton, PhD
New York, New York

Is the Supernatural Concept Useful?

The three articles on the supernatural by Jeremy Harris, Daniel Altschuler, and George Englebretsen in the May/June issue of SKEPTICAL INQUIRER contained no errors, yet neither did they provide much insight. Their arguments, to sum them up, are: the word adds nothing useful; anything real, no matter how strange, must by definition be natural; and it is not *natural* to believe in the *supernatural*. But, in fact, *supernatural* is a fine word. It is certainly as useful as *infinite* and *perfect*. When my friend tells me she has had a supernatural experience, I know immediately that it was an unusual event beyond her normal experiences and that she can't immediately call to mind a rational explanation. The word will probably awaken my "inner Randi," and I'll be off on a quest to show her a rational explanation—gently of course. But the word has done its job. It has communicated her interpretation of her experience succinctly.

The 6.6 billion humans in the world probably sort out into a huge group of ninety percent or more believers in the supernatural and a small group of ten percent, at best, of skeptics. It is a mistake to think this means that most humans are idiots while a small group of (god forgive us) "brights" are fighting the good fight to preserve the species while trying to avoid being lynched or burned at the stake. In fact there are species-destructive idiots in both pools and people fighting the good fight in both as well. Rather than rail against believers in the supernatural, we might do better to study why this irrational explanation works so very well for most people.

Bob Veitch
Minneapolis, Minnesota.

Your contributions on the natural-supernatural distinction by Jeremy Harris and Daniel Altschuler are naïve and, to an important extent, just plain wrong. I've written extensively on this question (see my blog) and find exactly the opposite to be the case, as have several other professional philosophers: there is a metaphysically significant and meaningful difference between what we mean by natural phenomena and what most people mean by supernatural phenomena. These are not the same thing, and the latter is not inaccessible to scientific inquiry. Arguing otherwise is actually socially dangerous, because it divorces us from ordinary language and thus from ordinary people, making us appear elitist and out of touch, which consequently results in everything we say being ignored as rubbish.

Richard C. Carrier
richardcarrier.blogspot.com

Authors Jeremy M Harris and Daniel R. Altschuler respond:

If Carrier means that we are somehow denying the ability of science to investigate supernatural claims, it is difficult to imagine how anyone who has actually read the articles could reach such a conclusion. For example, Harris's article contains a fairly detailed thought experiment explaining how scientists could and should be employed to investigate a convincing and apparently genuine miraculous event. Furthermore the last paragraph, arguably the most important in the piece, specifically points out that no candidate concepts of any kind, including dragons, deities, angels, immortal souls, etc., need be ruled out by abandoning the vacuous classification of "existence beyond nature." Nor is there anything in Altschuler's article which opposes scrutiny of claimed supernatural phenomena using the methods of science. In short, we are not militant "methodological naturalists."

On the other hand, if Carrier means that that we fail to recognize natural and supernatural phenomena as different things, this is also incorrect. Although we argue that the term "supernatural" is empty, it remains precisely as distinct from "natural" as nonexistent is from existent.

In respect to the "socially dangerous" argument by Carrier, it would follow that it would have been socially dangerous to question what most people meant by the terms "Witch" or "Arian" in past times, terms which caused suffering and death to many. (We agree that it would have been socially dangerous to the questioners). Although we are not philosophers we do believe (contrary to what Carrier implies) that we have the ability to think and argue, and do know what we are talking about.

George Englebretsen responds:

I felt what I wrote was worthwhile—that's why I did it. I was not aware of Harris's and Altschuler's contributions, but had I been it would not have altered what I wrote. Finally, and most important, I agree with Carrier that "what most people mean by supernatural phenomena" is a proper target of scientific scrutiny. After all, the scientific investigation of claims of the paranormal surely includes in its mandate the study of claims of the supernatural (including religion). Nothing I wrote in my contribution suggests otherwise.

George Englebretsen claims that atheism (and not religion) is natural. I suspect Mr. Englebretsen's worldview is mired in his (and our) current, modern (semi-) rational, middle-class experience.

If a recent study is accurate, the human species teetered on the brink of extinction merely 70,000 years ago. This would suggest we, as a species, have spent a great deal of time since struggling not only for survival but for our very existence. In *that* environment, I would suggest belief in a god or other superstitious nonsense is as natural as breathing.

In such an environment, there would be precious little time for disciplined, methodical, rational inquiry. Suggesting that an entire clan or tribe perched at the precipice of nonexistence could attribute that state to natural causes (e.g., drought) is asking a bit much I think.

Yes, we are animals capable of rationality, but we are not *that* rational.

John J. Nouveaux
Santa Rosa, California

Bones of Contention

Regarding "Bones of Contention" (SI, May/June 2008), the creation museum claims that "there will be those who will sneer but some will be challenged to think." There is nothing to say the two actions are incompatible. Creationism and its adherents have a well-earned weaseling reputation which fully justifies sneering.

David Mullen
Daventry, U.K.

Succumbing to Belief

Thank you for introducing me to SKEPTICAL INQUIRER. Unquestioned belief in many of the claims you are subjecting to scientific scrutiny is now *de rigueur* in many circles. To desist from such acceptance risks one being labeled as politically incorrect or culturally insensitive. This brings to mind an article in the May/June 2008 issue: "Just Like Jedi Knights (If Only)." The students and other volunteers of the karate master's *qi* force demonstration succumbed to his contactless blows; the skeptical tester did not. Instances abound of societies where shamans and witch doctors have intentionally injured or killed other members of those societies without physical contact. The skeptical experimenter did not feel the *qi* punch for the same reason that early white settlers in Australia did not die of the aboriginal witch doctor's curse.

Yashdhar Vyas
Jersey City, New Jersey

The Language War

Upon reading Martin Gardner's "Ann Coulter Takes on Darwin" (SI, May/June 2008), I see Christians winning the language war. George Orwell would be proud. Go to *National Review*'s Web site and read "Planet Gore." Guess the subject matter. Hint: they're skeptics.

Rather than criticizing accepted science, now they attack a person or use a euphemism: it's not "evolution," it's "Darwinism." It's not "global warming," it's the inevitable-sounding "climate change" (who can stop change?) now associated with bogeyman Al Gore.

Don't know about you, but it's not the theory of gravitation I oppose—it's this silliness called "Newtonism."

Dean Moore
Boulder, Colorado

In Jeopardy

As a confirmed skeptic, I was a little alarmed to discover not long ago that I had the unfailing ability to predict an event! Specifically, while watching Jeopardy!, I realized I could predict, just before they were revealed, which squares contained the Daily Double. Just before the distinctive sound announcing the square played, I would hear it in my mind.

Over a period of several programs I tested my "ability," and it never failed.

However, as I said, I am a confirmed skeptic and knew something else had to be at work here. Sure enough, there was. I found that I was anticipating the sound before every square, but it registered consciously only when it was confirmed by the sound and appearance of the square itself, never for any of the other squares. As usual, there was a logical explanation for what at first seemed to be a supernatural event.

Dave Gardner

Seattle, Washington

SI Hits a Home Run

I don't usually congratulate anyone for doing what I expect they should be doing, but once in awhile someone hits it out of the park. Your latest magazine is the best yet. Every article is excellent and thoroughly enjoyable. Just thought I'd toss kudos your way.

Ray L. Walker
raylwalker@comcast.net

The letters column is a forum for views on matters raised in previous issues. **Letters should be no longer than 225 words.** Due to the volume of letters we receive, not all can be published. Send letters as e-mail text (not as attachments) to letters@csicop.org. In the subject line, provide an informative identification, e.g.: "Letter re: Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122, or fax it to 505-828-2080.

COMMITTEE FOR SKEPTICAL INQUIRY

Scientific and Technical Consultants

Gary Bauslaugh, editor, *Humanist Perspectives*, Victoria, B.C., Canada
Richard E. Berendzen, astronomer, Washington, D.C.
Martin Bridgstock, Senior Lecturer, School of Science, Griffith University, Brisbane, Australia
Richard Busch, magician/mentalist, Pittsburgh, Penn.
Shawn Carlson, Society for Amateur Scientists, East Greenwich, RI
Roger B. Culver, professor of astronomy, Colorado State Univ.
Felix Ares de Blas, professor of computer science, University of Basque, San Sebastian, Spain
Michael R. Dennett, writer, investigator, Federal Way, Washington
Sid Deutsch, engineering consultant, Sarasota, Fla.
J. Dommanget, astronomer, Royale Observatory, Brussels, Belgium
Nahum J. Duker, assistant professor of pathology, Temple University
Taner Edis, Division of Science/Physics Truman State University
Barbara Eisenstadt, psychologist, educator, clinician, East Greenbush, N.Y.
William Evans, professor of communication, Center for Creative Media
Bryan Farha, professor of behavioral studies in education, Oklahoma City Univ.
John F. Fischer, forensic analyst, Orlando, Fla.
Eileen Gambrill, professor of social welfare, University of California at Berkeley
Luis Alfonso Gámez, science journalist, Bilbao, Spain
Sylvio Garattini, director, Mario Negri Pharmacology Institute, Milan, Italy
Laurie Godfrey, anthropologist, University of Massachusetts
Gerald Goldin, mathematician, Rutgers University, New Jersey
Donald Goldsmith, astronomer; president, Interstellar Media
Alan Hale, astronomer, Southwest Institute for Space Research, Alamogordo, New Mexico
Clyde F. Herreid, professor of biology, SUNY, Buffalo
Terence M. Hines, professor of psychology, Pace University, Pleasantville, N.Y.
Michael Hutchinson, author; SKEPTICAL INQUIRER representative, Europe
Philip A. Ianna, assoc. professor of astronomy, Univ. of Virginia
William Jarvis, professor of health promotion and public health, Loma Linda University, School of Public Health
I.W. Kelly, professor of psychology, University of Saskatchewan
Richard H. Lange, M.D., Mohawk Valley Physician Health Plan, Schenectady, N.Y.
Gerald A. Larue, professor of biblical history and archaeology, University of So. California
William M. London, California State University, Los Angeles
Rebecca Long, nuclear engineer, president of Georgia Council Against Health Fraud, Atlanta, Ga.
Thomas R. McDonough, lecturer in engineering, Caltech, and SETI Coordinator of the Planetary Society
James E. McGaha, astronomer, USAF pilot (ret.)
Chris Mooney, journalist, author, Washington correspondent, *SEED* Magazine
Joel A. Moskowitz, director of medical psychiatry, Calabasas Mental Health Services, Los Angeles
Jan Willem Nienhuys, mathematician, Univ. of Eindhoven, the Netherlands
Matthew C. Nisbet, assistant professor, School of Communication, American University
John W. Patterson, professor of materials science and engineering, Iowa State University
Massimo Pigliucci, professor in Ecology & Evolution at SUNY-Stony Brook, NY
James R. Pomerantz, professor of psychology, Rice University
Gary P. Posner, M.D., Tampa, Fla.
Daisie Radner, professor of philosophy, SUNY, Buffalo
Robert H. Romer, professor of physics, Amherst College
Karl Sabbagh, journalist, Richmond, Surrey, England
Robert J. Samp, assistant professor of education and medicine, University of Wisconsin-Madison
Steven D. Schafersman, asst. professor of geology, Miami Univ., Ohio
Chris Scott, statistician, London, England
Stuart D. Scott, Jr., associate professor of anthropology, SUNY, Buffalo
Erwin M. Segal, professor of psychology, SUNY, Buffalo
Carla Selby, anthropologist/archaeologist
Steven N. Shore, professor and chair, Dept. of Physics and Astronomy, Indiana Univ. South Bend
Waclaw Szybalski, professor, McArdle Laboratory, University of Wisconsin–Madison
Sarah G. Thomason, professor of linguistics, University of Pittsburgh

United States

ALABAMA. Alabama Skeptics, Alabama. Emory Kimbrough. Tel.: 205-759-2624. 3550 Watermelon Road, Apt. 28A, Northport, AL 35476 US.

ARIZONA. Tucson Skeptics Inc. Tucson, AZ. James McGaha. E-mail: JMCGAHA@PimaCC.Pima.EDU. 5100 N. Sabino Foothills Dr., Tucson, AZ 85715 US. **Phoenix Skeptics**, Phoenix, AZ. Michael Stackpole, P.O. Box 60333, Phoenix, AZ 85082 US.

CALIFORNIA. Sacramento Organization for Rational Thinking (SORT) Sacramento, CA. Ray Spangen-burg, co-founder. Tel.: 916-978-0321; e-mail: kitray@quiknet.com. PO Box 2215, Carmichael, CA 95609-2215 US. www.quiknet.com/~kitray/index1.html. **Bay Area Skeptics** (BAS) San Francisco—Bay Area. Tully McCarroll, Chair. Tel.: 415 927-1548; e-mail: tullyann@pacbell.net. PO Box 2443 Castro Valley, CA 94546-0443 US. www.BASkeptics.org. **Independent Investigations Group (IIG),** Center for Inquiry–*West*, 4773 Hollywood Blvd, Los Angeles, CA 90027 Tel.; 323-666-9797 ext. 159; Web site:www.iigwest.com. **Sacramento Skeptics Society**, Sacramento. Terry Sandbek, President. 4300 Auburn Blvd. Suite 206, Sacramento CA 95841. Tel.: 916 489-1774. E-mail: terry@sandbek.com. **San Diego Association for Rational Inquiry** (SDARI) President: Paul Wenger. Tel.: 858-292-5635. Program/general information 619-421-5844. Web site: www.sdari.org. Postal address: PO Box 623, La Jolla, CA 92038-0623.

COLORADO. The Denver Skeptics Meetup Group. Elaine Gilman, President. Skype address: elaine.gilman. 965 S. Miller Street, 302, Lakewood, CO 80226. Web site: http://skeptics.meetup.com/131/.

CONNECTICUT. New England Skeptical Society (NESS) New England. Steven Novella M.D., President. Tel.: 203-281-6277; e-mail: board@theness.com. 64 Cobblestone Dr., Hamden, CT 06518 US. www.theness.com.

D.C./MARYLAND. National Capital Area Skeptics NCAS, Maryland, D.C., Virginia. D.W. "Chip" Denman. Tel.: 301-587-3827. e-mail: ncas@ncas.org. PO Box 8428, Silver Spring, MD 20907-8428 US. http://www.ncas.org.

FLORIDA. Tampa Bay Skeptics (TBS) Tampa Bay, Florida. Gary Posner, Executive Director. Tel.: 813-849-7571; e-mail: tbs@cfiflorida.org; 5201 W. Kennedy Blvd., Suite 124, Tampa, FL 33609 US. www.tampabayskeptics.org. **The James Randi Educational Foundation.** James Randi, Director. Tel: (954)467-1112; e-mail jref@randi.org. 201 S.E. 12th St. (E. Davie Blvd.), Fort Lauderdale, FL 33316-1815. Web site: www.randi.org.

IOWA. Central Iowa Skeptics (CIS) Central Iowa, Rob Beeston. Tel.: 515-285-0622; e-mail: ciskeptics@hotmail.com. 5602 SW 2nd St. Des Moines, IA 50315 US. www.skepticweb.com.

ILLINOIS. Rational Examination Association of Lincoln Land (REALL) Illinois. Bob Ladendorf, Chairman. Tel.: 217-546-3475; e-mail: chairman@reall.org. PO Box 20302, Springfield, IL 62708 US. www.reall.org.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES) Kentucky. 880 Albany Road, Lexington, KY 40502. Contact Fred Bach at e-mail: fredwbach@yahoo.com; Web site www.kases.org; or (859) 276-3343.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM) Louisiana. Marge Schroth. Tel.: 225-766-4747. 425 Carriage Way, Baton Rouge, LA 70808 US.

MICHIGAN. Great Lakes Skeptics (GLS) SE Michigan. Lorna J. Simmons, Contact person. Tel.: 734-525-5731; e-mail: Skeptic31@aol.com. 31710 Cowan Road, Apt. 103, Westland, MI 48185-2366 US. **Tri-Cities Skeptics**, Michigan. Gary Barker. Tel.: 517-799-4502; e-mail: barkerg@svol.org. 3596 Butternut St., Saginaw, MI 48604 US.

MINNESOTA. St. Kloud Extraordinary Claim Psychic Teaching Investigating Community (SKEPTIC) St. Cloud, Minnesota. Jerry Mertens. Tel.: 320-255-2138; e-mail: gmertens@stcloudstate.edu. Jerry Mertens, Psychology Department, 720 4th Ave. S, St. Cloud State University, St. Cloud, MN 56301 US.

MISSOURI. Skeptical Society of St. Louis (SSSL) St. Louis, Missouri. Michael Blanford, President. E-mail: info@skepticalstl.org. 2729 Ann Ave., St. Louis, MO 63104 US. www.skepticalstl.org.

NEVADA. Skeptics of Las Vegas, (SOLV) PO Box 531323, Henderson, NV 89053-1323. E-mail: rbanderson@skepticslv.org. Web site: www.skepticslv.org./.

NEW MEXICO. New Mexicans for Science and Reason (NMSR) New Mexico. David E. Thomas, President. Tel.: 505-869-9250; e-mail: nmsrdave@swcp.com. PO Box 1017, Peralta, NM 87042 US. www.nmsr.org.

NEW YORK. New York Area Skeptics (NYASk) metropolitan NY area. Jeff Corey, President. 18 Woodland Street, Huntington, NY 11743, Tel: (631) 427-7262 e-mail: jcorey@liu.edu, Web site: www.nyask.com. **Inquiring Skeptics of Upper New York** (ISUNY) Upper New York. Michael Sofka, 8 Providence St., Albany, NY 12203 US. **Central New York Skeptics** (CNY Skeptics) Syracuse. Lisa Goodlin, President. Tel: (315) 446-3068; e-mail: info@cnyskeptics.org, Web site: cnyskeptics.org 201 Milnor Ave., Syracuse, NY 13224 US.

NORTH CAROLINA. Carolina Skeptics North Carolina. Eric Carlson, President. Tel.: 336-758-4994; e-mail: ecarson@wfu.edu. Physics Department, Wake Forest University, Winston-Salem, NC 27109 US. www.carolinaskeptics.org.

OHIO. Central Ohioans for Rational Inquiry (CORI) Central Ohio. Charlie Hazlett, President. Tel.: 614-878-2742; e-mail: charlie@hazlett.net. PO Box 282069, Columbus OH 43228 US. **South Shore Skeptics** (SSS) Cleveland and counties. Jim Kutz. Tel.: 440 942-5543; e-mail: jimkutz@earthlink.net. PO Box 5083, Cleveland, OH 44101 US. www.southshoreskeptics.org/. **Association for Rational Thought** (ART) Cincinnati. Roy Auerbach, president. Tel: 513-731-2774, e-mail: raa@cinci.rr.com. PO Box 12896, Cincinnati, OH 45212 US. www.cincinnati skeptics.org.

OREGON. Oregonians for Science and Reason (O4SR) Oregon. Jeanine DeNoma, president. Tel.: (541) 745-5026; e-mail: wilkinsa@peak.org; 39105 Military Rd., Monmouth, OR 97361 US. Web site: www.04SR.org.

PENNSYLVANIA. Philadelphia Association for Critical Thinking (PhACT), much of Pennsylvania. Eric Krieg, President. Tel.: 215-885-2089; e-mail: erickrieg@verizon.net. By mail C/O Ray Haupt 639 W. Ellet St., Philadelphia PA 19119.

TENNESSEE. Rationalists of East Tennessee, East Tennessee. Carl Ledenbecker. Tel.: 865-982-8687; e-mail: Aletall@aol.com. 2123 Stonybrook Rd., Louisville, TN 37777 US.

TEXAS. North Texas Skeptics NTS Dallas/Ft Worth area, John Blanton, Secretary. Tel.: 972-306-3187; e-mail: skeptic@ntskeptics.org. PO Box 111794, Carrollton, TX 75011-1794 US. www.ntskeptics.org.

VIRGINIA. Science & Reason, Hampton Rds., Virginia. Lawrence Weinstein, Old Dominion Univ.-Physics Dept., Norfolk, VA 23529 US.

WASHINGTON. Society for Sensible Explanations, Western Washington. Tad Cook, Secretary. E-mail: K7RA@arrl.net. PO Box 45792, Seattle, WA 98145-0792 US. http://seattleskeptics.org.

PUERTO RICO. Sociedad De Escépticos de Puerto Rico, Luis R. Ramos, President. 2505 Parque Terra Linda, Trujillo Alto, Puerto Rico 00976. Tel: 787-396-2395; e-mail: Lramos@escepticospr.com; Web site www.escepticor.com.

International groups listings have been moved to our Web site: **www.csicop.org**

CENTERS FOR INQUIRY

www.centerforinquiry.net/about/centers

TRANSNATIONAL
3965 Rensch Road, Amherst, NY 14228
Tel.: (716) 636-4869

AUSTIN
PO Box 202164, Austin, TX 78720-2164
Tel.: (512) 919-4115

CHICAGO
PO Box 7951, Chicago, IL 60680-7951
Tel.: (312) 226-0420

INDIANAPOLIS
350 Canal Walk, Suite A, Indianapolis, IN 46202
Tel.: (317) 423-0710

MICHIGAN
3777 49th Street SE, Grand Rapids, MI 49512
Tel.: (616) 698-2342

NEW YORK CITY
80 Broad Street, 5th Floor, New York, NY 10004
Tel.: (212) 504-2945

SAN FRANCISCO
E-mail: sf@centerforinquiry.net

TAMPA
5201 West Kennedy Blvd., Suite 124, Tampa, FL 33609
Tel.: (813) 849-7571

WASHINGTON, DC
621 Pennsylvania Ave. SE, Washington, DC 20003
Tel.: (202) 546-2330

WEST
4773 Hollywood Blvd., Hollywood, CA. 90027
Tel.: (323) 666-9797

ARGENTINA
Av. Santa Fe 1145 - 2do piso, (C1059ABF)
Buenos Aires, Argentina
Tel.: +54-11-4811-1858

CHINA
China Research Institute for Science
Population, NO. 86, Xueyuan Nanlu Haidian Dist., Beijing, 100081 China
Tel.: +86-10-62170515

EGYPT
44 Gol Gamal St., Agouza, Giza, Egypt

FRANCE
Dr. Henri Broch, Universite of Nice, Faculte des Sciences, Parc Valrose, 06108, Nice cedex 2, France
Tel.: +33-492-07-63-12

GERMANY
Kirchgasse 4, 64380 Rossdorf, Germany
Tel.: +49-6154-695023

INDIA
A 60 Journalist colony, JubileeHills, Hyderabad-500033, India
Tel.: +91-40-23540676

LONDON
Conway Hall, 25 Red Lion Square, London WC1R 4RL, England
E-mail: slalvani@centerforinquiry.net

NEPAL
Humanist Association of Nepal, PO Box 5284, Kathmandu Nepal
Tel.: +977-1-4413-345

NEW ZEALAND
E-mail: bcooke@centerforinquiry.net

NIGERIA
PO Box 25269, Mapo, Ibadan, Oyo State, Nigeria
Tel.: +234-2-2313699

ONTARIO
216 Beverley Street, Toronto, Ontario, M5T 1Z3, Canada
Tel.: (416) 971-5676

PERU
D. Casanova 430, Lima 14 Peru
E-mail: cipsiperu@yahoo.com

POLAND
Lokal Biurowy No.8, 8 Sapiezynska Sr., 00-215, Warsaw, Poland

RUSSIA
Dr. Valerii A. Kuvakin, 119899 Russia, Moscow, Vorobevy Gory, Moscow State University, Philosophy Department

SENEGAL
PO Box 15376, Dakar – Fann, Senegal
Tel.: +221-501-13-00